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VOLUME FIFTH.

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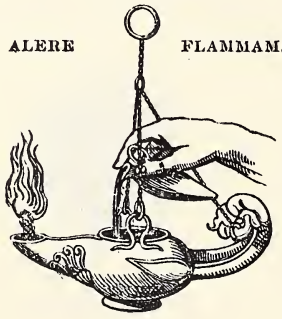

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PREFACE.

The fifth volume of the 'Record' forms a systematic guide-book to about 34,000 pages* of the zoological literature published (with the exception of a small part) within the year 1868.

The Editor regrets that the publication of the second, and consequently also of the third, part of this volume has been delayed to the end of the year; and he will not plead any other excuse beyond the fact that, with regard to the regularity of the appearance of the volumes, he is entirely dependent on the Contributors. The first part was published as early as July.

It was mentioned last year that zoologists are indebted to the British Association for a second grant of £100 towards the expenses of the preparation of this volume, the Contributors having again made a sacrifice similar to that of the previous year.

ALBERT GÜNTHER.

London, December 1869.

* This number is divided between the various classes thus:—Mammals 5300, Birds 7200, Reptiles 700, Fishes 1900, Mollusks and Molluscoids 5100, Crustaceans 1000, Arachnids and Myriopods 640, Insects 9200 (viz. Coleoptera 3500, Hymenoptera 800, Lepidoptera 1500, Diptera 1000, Neuroptera and Orthoptera 550, Rhynchota 550), Rotifers 40, Annelids 1300, Scolecides 700, Echinoderms 500, Cœlenterates 200, Protozoa 650.

[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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RECORD

OF

ZOOLOGICAL LITERATURE.

MAMMALIA

BY

ALBERT GÜNTHER, M.A., M.D., PH.D.

A. *Separate Publications.*

OWEN, R. On the Anatomy of Vertebrates. Vol. III. Mammals. London, 1868, 8vo, pp. 915.

We have given a notice of this work in Zool. Record, iii. p. 1. It is concluded with the present (third) volume, which contains the anatomy of the soft parts of mammals. The last chapter is devoted to an examination of the questions of homology and teleology, of the relations of existing to extinct species, of their development, and of the origin of life,—questions which had occupied for years the thoughts of French biologists and of the author.

DARWIN, CH. The Variation of Animals and Plants under Domestication. London, 1868, 8vo. Vol. I. pp. 411; Vol. II. pp. 486.

The author states that the object of his work is to give in the first volume, under the head of each species, only such facts as he has been able to collect or observe showing the amount and nature of the changes which animals and plants have undergone whilst under man's dominion, or which bear on the general principles of variation. He does not intend to describe all the numerous races of animals domesticated by man, except in one case only, namely in that of the domestic pigeon. The second

volume is devoted to general considerations founded on the materials treated of in the first; the causes and laws of variability are discussed, inheritance and its laws, crossing, sterility from a changed condition of life and close interbreeding—and the coefficient selection by man, methodical or unconscious. Finding that these subjects, as well as the several modes of reproduction, stand in some sort of relation to each other, and ought to be connected by a tangible method, Mr. Darwin advances the hypothesis of "Pangenesis," which implies that the whole organization, in the sense of every separate atom or unit, reproduces itself.

It will be evident from these remarks that the work before us would be more properly referred to in a record on general zoology than in one on Mammalia. Nevertheless, although it is written with reference to a particular theory, the mammalogist will find such an amount of facts relating to the domesticated Mammalia, gathered in a connected form, that especially the first volume will prove to be of the highest interest and most instructive even to specialists, the more so as the author states the facts favourable or opposed to his theory with equal impartiality. We cannot enter into the details of his accounts of the several species within the narrow limits of this notice, the author omitting nothing in the history, geographical distribution, zoological and anatomical characters of each animal and its races which could throw light upon its origin; and we must be satisfied to mention here that he concludes that dogs, cats, pigs, oxen, sheep, and goats have descended from several wild species, whilst horses, asses, and rabbits are each derived from a single species only.

Wagner, M. Die Darwin'sche Theorie und das Migrationsgesetz der Organismen. Leipzig, 1868. 8vo, pp. 62.

The author argues that natural selection by itself does not account for the origin of new varieties or species, but that it must be preceded by a migration (active or passive) of individuals from their original habitat, and that such colonists must remain separated from the typical stock for a considerable time, in order to allow the greater or less amount of inherent variability to be developed by and adapted to the new external conditions, without being interfered with by constant interbreeding with the old type.

A paper by the same author in Sitzgsber. Bayr. Ak. Wiss. 1868, i. pp. 359–395, is merely preliminary to the present more detailed publication.

Brandt, J. F. Zoogeographische und Palæontologische Beiträge. Verhandl. mineral. Gesellsch. St. Petersb. ii. Also separately printed, St. Petersb. 1867, 8vo, pp. 258.

We have referred to these important contributions in Zool.

Record, iv. p. 6; having now received a copy of the work itself, we are in a position to give a more detailed description of its contents in the Special Part (see p. 13).

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

The principal object of this work is to describe and figure the new additions to the Collection of Mammalia in the Paris Museum. The authors, in accordance with the present state of science, will pay as much attention to the anatomy as to the external characters of the species selected.

The first three parts have been published, and contain:—1. A memoir by M. H. Milne-Edwards, entitled "Considérations sur la classification naturelle des Mammifères." 2. A memoir on *Hippopotamus liberiensis*, by M. A. Milne-Edwards, accompanied by 5 plates. 3. Some plates illustrative of a memoir, by the same, on the Mammals of Northern China, which will appear in the next part.

The complete work will form one volume of letterpress with an Atlas of about 100 plates, several of which are coloured. Each part contains five plates and about 20 pages of letterpress.

Carus, J. V., und Gerstäcker, C. E. A. Handbuch der Zoologie. Wirbelthiere, bearbeitet von J. Victor Carus. Band I. Erste Hälfte. Leipzig, 1868. 8vo, pp. 432.

This handbook of zoology has been prepared in such a manner as to be useful to the beginner as well as to the more advanced student. Also it may prove to be a very welcome guide for the teacher. Prof. Carus, who has undertaken the Vertebrates, and, in the volume before us, carried on the work to the Saurians, gives a very complete *résumé* of the anatomical peculiarities of the classes, adding a short account of the principal fossil forms, and enters more into the details of generic distinctions than is the case with the majority of similar handbooks. But it is our duty to remark that the author, in his attempt at a tolerably complete enumeration of genera, has failed to keep it free from those errors to which every compiler is exposed when not specially acquainted with the subject. However, these errors do not detract from the usefulness of the work to those for whom it is intended; and we hope that a similar handbook may soon be prepared for the English student.

Brandt, J. F. Symbolæ Sirenologicæ. Fasciculus II. et III. Sireniorum, Pachydermatum, Zeuglodontum et Cetaceorum ordinis osteologia comparata, nec non Sireniorum generum monographiæ. Petrop. 1861–1868. 4to, pp. 384, with 9 plates.

Prof. v. Brandt's researches into the natural history and structure of *Rhytina* date as far back as 1846, in which year he published

a memoir on this animal under the title "Symbolæ Sirenologicæ." At a somewhat later period he received additional and more perfect materials, so that he was enabled in the year 1861 to lay before the Academy of Sciences of St. Petersburg a continuation of the 'Symbolæ,' forming Fasciculus II. However, being desirous of rendering these researches as complete as possible, especially with regard to the comparison of the osteology of living and fossil Pachyderms and Cetaceans, he delayed the final publication until now, when to the second fascicle a third could be added. Thus the author's researches extend far beyond the Sirenia; and therefore the Recorder thinks it better to insert this notice here, instead of under the heading of that group.

The SECOND fascicle is divided into five books. Book First treats in detail of the osteology of *Rhytina*, of the masticatory organs, and the size to which the animal attained; Books Second and Third of the osteological characters of *Manatus*, *Rhytina*, *Helicore*, and *Halitherium*; in Book Fourth the relations of those genera to one another with regard to osteological characters are considered. Book Fifth is devoted to the osteological relations between the Sirenia and Pachydermata, the author entering into an examination of the skeletons of *Tapir*, *Rhinoceros*, *Hippopotamus*, *Elephas*, *Mastodon*, *Dinotherium*, *Palæotherium*, *Suidæ*, *Equus*, *Anoplotherium*, *Toxodon*, and *Hyrax*. In the same manner the osteological characters of the principal divisions of the *Cetacea* are sketched out, and their affinities to, or differences from, the Sirenia considered.

The THIRD fascicle contains additions and matter supplementary to the subjects treated in the two preceding. It is divided into seven books:—1. On the literature, anatomical and zoological characters, geographical distribution, and mode of life of the Sirenians generally; 2. of the *Manatus*, and 3. of *Halicore* especially. 4. This book contains chiefly supplementary matter referring to the literature of *Rhytina*, to the representations (a new ideal figure is added), to various parts of its anatomy, to its geographical distribution and extinction. Some remarks on the extinction of *Halitherium* are added. 5. A very extensive review of the opinions of the various authors on the affinities and classification of the Sirenia. 6. All the essential characters of the Sirenians, Ungulates, Cetaceans, and Zeuglodonts are compared. The Sirenians are considered to be a distinct order of Mammals, allied to the phytophagous Pachyderms, and divided into two families, viz. Manatidæ and Halicoridæ, the latter comprising *Halitherium*, *Halicore*, and *Rhytina*. 7. In conclusion the author treats of the relations of the genera of Sirenians to one another with regard to their geographical distribution and geological age. He enters into an examination of the evidence offered by these animals in support of the evolutional theory, and comes to the conclusion that the generic Sirenian type existed

as far back as the Miocene period, with all the essential characters and mutual morphological relations as at present, and that there is no proof that in this long period a transformation has taken place from a less perfect Sirenian type to a more developed one, or from the Sirenian type to the Pachyderms. It is more probable that the origin of the Sirenians from inferior types is to be carried to a time preceding the Miocene, perhaps the Eocene period.

Beneden, P. J. van, et Gervais, Paul. Ostéographie des Cétacés vivants et fossiles comprenant la déscription et l'iconographie du squelette et du système dentaire de ces animaux, ainsi que des documents relatifs à leur histoire naturelle. Paris. Text 4to, Atlas fol.

Three parts of this magnificent work were issued in 1868. The text will form one volume of about 580 pages with figures, and be accompanied by an Atlas containing 50 lithographic plates. Each part contains 20 pages and 4 plates. Although the authors have chosen Osteography as the title of their work, because the determination and systematic arrangement of Cetaceans depend chiefly on the skeleton, they will nevertheless treat of other parts of their structure and natural history, so that, in fact, the work will be an account of Cetaceans as complete as the present state of science and of the materials in the various museums will permit. The plates are very well drawn, and the figures of a suitable size. The parts published contain a portion of the account of the Right Whales, and the Atlas the plates belonging to this genus and a part of the Ziphioids.

Jerdon, T. C. The Mammals of India; a Natural History of all the animals known to inhabit Continental India. Roorkee, 1867. 8vo, pp. 319.

The author enumerates 242 species of Mammals from the Continent of India, giving a diagnosis with an indication of the localities and occasional anecdotes illustrative of the habits. Mr. Blyth's original labours and determinations are followed throughout, and the observations made by Hodgson, Elliot, and Horsfield are freely used and added to those of the author. General outlines of the characters of the class and families for the instruction of beginners are also given. The synonymy and references to literature are extremely meagre and defective. It will be evident from these remarks that Mr. Jerdon's compilation will be a great boon to the class of men who, living in India, at a distance from works or places of instruction, are desirous of acquainting themselves with "animals." The naturalist will prefer to consult the original accounts; and a critical general work on the Indian Mammalia is still a desideratum. We may remark that Mr. Jerdon has abstained from describing new species, except in one or two cases.

Krefft, G. Notes on the Fauna of Tasmania. Sydney, 1868. 8vo, pp. 14.
Printed for private circulation and illustrated by photographs.

Pouchet, G. Mémoires sur le Grand Fourmilier (*Myrmecophaga jubata*, L.). Livr. 1 & 2. Paris, 1867. 4to, pp. 96, pls. 1–7.
The author divides this publication into five memoirs, viz. anatomy of the fore limb, of the orbit, of the infrahyoid region, of the nervous centres and cerebral nerves, and of the female urogenital organs and fœtus. Two parts, containing the first two memoirs and part of the third, are published; the entire work will contain about 250 pages and 16 plates.

Morgan, L. H. The American Beaver and his works. Philadelphia, 1868. 8vo, pp. 330, with plates and woodcuts.

B. *Papers published in Journals.*

Abbott, C. C. On the Seals of the Falkland Islands. Communicated, with Notes, by P. L. Sclater. Proc. Zool. Soc. 1868, pp. 189–192.

Bambeke, C. van. Quelques remarques sur les squelettes de cétacés, conservés à la collection de l'Université de Gand. Bull. Ac. Roy. Belg. 1868, xxvi. pp. 20–61, with woodcuts.

Beneden, P. J. van. Notice sur la découverte d'un os de baleine, à Furnes. Bull. Ac. Roy. Belg. 1867, xxiii. pp.

——. Les Baleines et leur distribution géographique. Ibid. 1868, xxv. pp. 9–21, with a map (or in Ann. Sc. Nat. ix. pp. 43–52).

——. Les squelettes de Cétacés et les Musées qui les renferment. Ibid. pp. 88–125.

——. De la composition du bassin des cétacés. Ibid. pp. 428–433, with a plate.

——. La première côte des cétacés, à propos de la notice du Dr. J. E. Gray, sur la distribution des baleines. Ibid. 1868, xxvi. pp. 7–17, with two plates.

——. Sur le bonnet et quelques organes d'un fœtus de baleine de Groënland. Ibid. pp. 186–195, with woodcuts.

Brandt, J. F. Einige Worte über die Gestalt des Hirn's der Seekühe (Sirenia). Bull. Ac. Sc. St. Petersb. 1867, xii. pp. 269–270; or Mélang. Biolog. vi. pp. 364–366.

——. Einige Worte über eine neue unter meiner Leitung entworfene ideale Abbildung der Steller'schen Seekuh. *L. c.* 1°, pp. 457–458; *l. c.* 2°, pp. 571–572.

Brandt, J. F. Ueber die Gruppirung der Gattungen der Ordnung der Sirenien. *L. c.* 1°, xiii. 1868, pp. 21–23; *l. c.* 2°, pp. 593–596.

The contents of these papers being embodied in the author's general work (see p. 3), we do not refer to them again in the special part of this Record.

Brown, R. On the Mammalian Fauna of Greenland. Proc. Zool. Soc. 1868, pp. 330–362.

——. Notes on the history and geographical relations of the Pinnipedia frequenting the Spitzbergen and Greenland Seas. Ibid. pp. 405–440.

——. Notes on the history and geographical relations of the Cetacea frequenting Davis Strait and Baffin's Bay. Ibid. pp. 533–556.

Bruhin, P. Th. A. Die Wirbelthiere Vorarlbergs. Verh. zool.-bot. Ges. Wien, 1868, pp. 223–262.

A paper of local interest. The author enumerates the vertebrates of Vorarlberg (north of Switzerland), including those of the Lake of Constance and the Rhine valley.

Burmeister, H. Mammifera pinnata argentina. Anal. Mus. Buenos Ayres, 1868, pp. 301–311.

Enumerates the species in the Museum of Buenos Ayres.

——. Descripcion detallada del *Epiodon australe*. Ibid. pp. 312–366, with six plates.

——. Ueber die Ohrenrobben der Ost-Küste Süd-Amerika's. Zeitschr. ges. Ntrwiss. 1868, xxxi. pp. 294–301.

——. On *Globiocephalus grayi*, nov. spec. Ann. & Mag. Nat. Hist. 1868, i. pp. 52–54.

Carter, A., and Macalister, A. On the anatomy of *Balænoptera rostrata*. Philos. Trans. 1868, vol. clviii. pp. 201–261, with four plates.

Cooper, J. G. The fauna of Montana Territory. Amer. Natur. 1868, ii. pp. 528–538.

David, Armand. Journal d'un Voyage en Mongolie fait en 1866. Nouv. Arch. Mus. d'Hist. Nat. iii. 1867, Bull. pp. 18–96. (Not concluded.)

Edwards, A. Milne-. Observations sur quelques Mammifères du Nord de la Chine. Ann. Sc. Nat. 1867, viii. pp. 374–376. (Continuation: see Zool. Record, iv. p. 7.)

——. Observations sur le groupe des Rats-Taupes. Compt. Rend. 1868, lxvii. pp. 438–441.

Fischer, P. Note sur un Cétacé (*Grampus griseus*) échoué sur les côtes de France. Ann. Sc. Nat. 1867, viii. pp. 363–373.

Fitzinger, L. J. Kritische Untersuchungen über die der natürlichen Familie der Spitzmäuse angehörigen Arten. Sitzgsber. Ak. Wiss. Wien, lvii. 1868, pp. 121–180, 425–514, 583–645. [Critical researches on the species of the natural family of Shrews.]

——. Ueber die Racen der Hauskatze (*Felis domestica*). Zoolog. Gart. 1868, pp. 51–60.

Flower, W. H. On the probable identity of the Fin-Whales described as *Balænoptera carolinæ* (Malm) and *Physalus sibbaldii* (Gray). Proc. Zool. Soc. 1868, pp. 187–189.

——. On the development and succession of the teeth in the Armadillos (*Dasypodidæ*). Ibid. pp. 378–380.

——. On the osteology of the Cachalot or Sperm-Whale (*Physeter macrocephalus*). Trans. Zool. Soc. 1868, vi. pp. 309–372, with plates 55–61 and woodcuts.

Gayot, E. Lièvres, Lapins et Léporides. Comp. Rend. 1868, lxvii. pp. 987–989.

Giebel, C. Ueber einige Otternschädel. Zeitschr. ges. Ntrwiss. 1868, xxxi. pp. 210–217. [On the skulls of some species of *Lutra*.]

Gray, J. E. Revision of the species of *Hyrax*, founded on the specimens in the British Museum. Ann. & Mag. Nat. Hist. 1868, i. pp. 35–51.

——. Observations on Sea-Bears (*Otariadæ*), and especially on the Fur-Seals and Hair-Seals of the Falkland Islands and Southern America. Ibid. pp. 99–110.

——. Observations on the Fur-Seals of the Antarctic Seas and the Cape of Good Hope, with the description of a new species. Ibid. pp. 215–220.

——. On the geographical distribution of the *Balænidæ* or Right Whales. Ibid. pp. 242–247.

——. Synopsis of the species of Pigs (*Suidæ*) in the British Museum. Proc. Zool. Soc. 1868, pp. 17–49.

——. Observations on the Margin-tailed Otter (*Pteronura sandbachii*). Ibid. pp. 61–66, with a plate and woodcuts.

——. Notice of *Clymene similis*, a new Dolphin sent from the Cape by Mr. Layard. Proc. Zool. Soc. 1868, pp. 146–149, with two woodcuts.

——. Notices of a new species of *Colobus* and of another Monkey from Zanzibar. Ibid. pp. 180–182, pl. 15.

Gray, J. E. Synopsis of the species of *Saccomyinæ*, or Pouched Mice, in the Collection of the British Museum. Ibid. pp. 199–206.

——. Notice of a Badger from China (*Meles chinensis*) sent by Mr. Swinhoe, H.M. Consul at Amoy, and Dr. Hartland from Hong Kong. Ibid. pp. 206-209, with woodcuts.

——. Notes on the skulls of the species of Dogs, Wolves, and Foxes (*Canidæ*) in the Collection of the British Museum. Ibid. pp. 492–521, with woodcuts.

——. Note on the Bottlenosed Whales (*Tursio*). Ibid. pp. 560–562, with a woodcut.

Gundlach, J. Revista y Catalogo de los Mamiferos Cubanos Repert. Fis.-nat. de Cuba, ii. pp. 40–56.

Hoeven, J. van der. Sur les espèces du groupe *Nycticebus* (partic. du genre *Stenops*, Ill.). Arch. Néerland. par Baumhauer, 1868, iii. pp. 95–96.

Jeitteles, L. H. Eine für Niederösterreich und die nördlichen Alpenländer neue Fledermans. Verh. zool.-bot. Ges. Wien, 1868, pp. 121–124. [A bat (*Vespertilio schreibersii*) new to the fauna of Lower Austria and countries north of the Alps.]

Krefft, G. Notes on Australian Zoology. Proc. Zool. Soc. 1868, pp. 2–4.

Macalister, A. (See Carter, A.)

M'Bain, J. On the skull of an Otaria (*Otaria ulloæ*?) from the Chincha Islands. Journ. Anat. & Phys. 1868, iii. pp. 109–112.

Moseley, H. N., and Lankester, E. R. On the nomenclature of mammalian teeth and on the dentition of the Mole, (*Talpa europæa*) and the Badger (*Meles taxus*). Journ. Anat. & Phys. 1868, iii. pp. 73–80.

Peters, W. Ueber die zu den *Glossophagæ* gehörigen Flederthiere und über eine neue Art der Gattung *Colëura*. Monatsber. Ak. Wiss. Berlin, 1868, pp. 361–368, with a plate.

——. Ueber die von dem Marquis G. Doria in Sarawak auf Borneo gesammelten Flederthiere. Ibid. pp. 626–627.

Reinhardt, J. Nogle Bemærkninger om Islændernes "Steypireyör," en Efterskrift til Hr. Hallas's Optegnelser om nogle paa et Hvalfangsttog i Havet omkring Island jagttagne Hvaler. Vidensk. Meddel. naturh. Foren. Kjöbenh. 1868, pp. 178–201, with woodcuts. Translated in Ann. & Mag. Nat. Hist. 1868, ii. pp. 323–340.

Sanson, A. Mémoire sur la nouvelle détermination d'un type spécifique de race chevaline à cinq vertèbres lombaires.

Robin, Journ. Anat. et Phys. 1868, pp. 225–268; or Compt. Rend. 1868, lxvi. pp. 673–674.

Sars, G. O. Om individuelle Variationer hos Rörhvalerne og de deraf betingede Uligheder i den ydre og indre Bygning. Vidensk.-Selsk. Forhandl. 1868, pp. 31–74. [On individual variations of the Fin-Whales, and differences in external and internal structure dependent on them.]

Sclater, P. L. Notes on Baker's Antelope (*Hippotragus bakeri*). Proc. Zool. Soc. 1868, pp. 214–218, with a plate and woodcuts.

——. On the breeding of Mammals in the Gardens of the Zoological Society of London during the past twenty years. Ibid. pp. 623–626.

Tristram, H. B. On the geographical and geological relations of the Fauna and Flora of Palestine. Proc. Roy. Soc. 1868, pp. 316–319 (abstract).

Turner, W. On the cranium of an apparently new species of *Arctocephalus* [*schisthyperoës*]. Journ. Anat. & Phys. 1868, iii. pp. 113–117.

Wright, E. P. Notes on the Bats of the Seychelle group of islands. Ann. & Mag. Nat. Hist. 1868, ii. pp. 436–438.

C. *Anatomical and Physiological Publications.*

Alix, E. Recherches sur la disposition des lignes papillaires de la main et du pied, précédées de considérations sur la forme et les fonctions de ces deux organes. Ann. Sc. Nat. 1867, viii. pp. 295–362; 1868, ix. pp. 5–42, with four plates.

Arloing, S. Etude comparative des organes génitaux du lièvre, du lapin et du léporide. Compt. Rend. 1868, lxvi. pp. 1267–1269; or Robin, Journ. Anat. 1868, pp. 449–478.

Barkow, H. C. Comparative Morphologie des Menschen und der menschenähnlichen Thiere. Vol. v. Die Blutgefässe, vorzüglich die Schlagadern der Säugethiere. Breslau, 1868, fol., 43 col. plates. [The blood-vessels, especially the arteries, of mammals.]

Bischoff, T. Die Grosshirn-Windungen des Menschen mit Berücksichtigung ihrer Entwicklung bei dem Fœtus und ihrer Anordnung bei den Affen. Munich, 1868, 4to, with seven plates. [The cerebral convolutions of man, with regard to their development in the fœtus, and their arrangement in apes.]

——. Neue Beobachtungen zur Entwicklung des Meerschwein-

chens. Munich, 1866, 4to, with four plates. [New observations on the development of the Guinea-pig.]

Dieck, R. Die Hautmuskeln des Fuchs-Kopfes. Zeitschr. ges. Ntrwiss. 1868, xxxi. pp. 218–223. [The subcutaneous muscles of the head of the Fox.]

Gegenbaur, C. Sur la torsion de l'humérus. Ann. Sc. Nat. 1868, x. pp. 55–67 (translated from Jena. Zeitschr. iv.).

Hulke, J. W. Note on the anatomy of the blood-vessel system of the retina of the Hedgehog. Proc. Roy. Soc. 1868, p. 439 (abstract).

Jones, Th. W. Microscopical characters of the rhythmically contractile muscular coat of the veins of the web of the Bat's wing. Proc. Roy. Soc. 1868, p. 342 (abstract).

Klein, — von. Vergleichende Beschreibung des Schädels der Wirbelthiere. Würtemb. ntrw. Jahresh. 1868, pp. 71–171. [Comparative description of the skull of Vertebrates.]

Lee, R. J. Observations on the ciliary muscle in Fish, Birds, and Quadrupeds. Journ. Anat. & Phys. 1868, iii. pp. 14–23, with woodcuts.

Legros, Ch. Mémoire sur l'anatomie et la physiologie du tissu érectile dans les organes génitaux des Mammifères, des Oiseaux et de quelques autres vertébrés. Robin, Journ. Anat. et Phys. 1868, pp. 1–26, pls. 1–5.

Loewenberg, B. La lame spirale du Limaçon de l'oreille de l'homme et des Mammifères. Robin, Journ. Anat. et Phys. 1868, pp. 626–657, pls. 25 & 26.

Macalister, A. Contributions toward the formation of a correct system of muscular homologies. Ann. & Mag. Nat. Hist. 1868, i. pp. 313–322.

——. Notes on the homologies and comparative anatomy of the atlas and axis. Journ. Anat. & Phys. 1868, iii. pp. 54–64.

M'Intosh, W. C. Notes on the structure of a monstrous kitten. Journ. Anat. & Phys. 1868, iii. pp. 366–373, pls. 8 & 9.

Miklucho-Maclay. Beitrag zur vergleichenden Anatomie des Gehirns. Jena. Zeitschr. 1868, iv. pp. 553–569, with woodcuts. [Contribution to the comparative anatomy of the Brain.]

Parker, W. K. A monograph of the structure and development of the shoulder-girdle and sternum in the Vertebrata. London, 1868, 4to, pp. 237, with 30 plates. Published by the Ray Society.

Pouchet, G. Mémoire sur l'encéphale des Edentés. Robin, Journ. Anat. et Phys. 1868, pp. 658–675 (1ère partie).

——. Des conditions anatomiques de la fonction salivaire sous-maxillaire chez les Edentés. Comp. Rend. 1868, lxvi. pp. 670–673.

Sander, J. Ueber das Quercommissurensystem des Grosshirns bei den Beutelthieren. Reichert u. Du Bois-Reymond's Arch. Anat. 1868, pp. 711–718, with a plate. [On the system of transverse commissures of the cerebrum of Marsupials.]

Turner, W. Further observations on the stomach in the Cetacea. Journ. Anat. & Phys. 1868, iii. pp. 117–119.

Winiwarter, A. v. Zur Anatomie des Ovariums der Säugethiere. Sitzgsber. Ak. Wiss. Wien, 1868, lvii. pp. 922–928, with a plate.

General Notes and Faunæ.

The work of Messrs. Milne-Edwards, father and son, commences, as mentioned above (p. 3), with an essay by the former on the classification of Mammals, extending over pp. 5–42. He defends the view sustained by him for a long time, viz. that embryology is the most reliable guide in the classification of the animals of this class. We indicate the arrangement proposed by him in the following synopsis :—

First Subclass NORMAL MAMMALIA.

First Phalanx Hématogénètes. *Toes nailed, generally five; teeth in front of the mouth.*

First Legio *Micrallantoïdés.* Molars essentially crushing or rasping; condyles of the lower jaw rounded or elongate.

First Cohors *Primates.* Hands; brain with gyri; dental system complete.

1. Bimana. 2. Quadrumana.

Second Cohors *Plébéiates.* No hands in front, and rarely behind; dental system frequently incomplete.

3. Chiroptera. 4. Insectivora. 5. Rodentia.

Second Legio *Mésallantoïdés.* Molars trenchant; condyles of the lower jaw transversely enlarged.

6. Carnivora. 7. Pinnipedia.

Second Phalanx Hyraciens. Feet plantigrade and subungulate; four toes; dental system complete; no trunk.

Third Phalanx Proboscidiens. Toes subungulate, five; a trunk.

Fourth Phalanx Mégallantoïdiens. Toes with nails; incisors; never five toes; digitigrade.

1. Perissodactyla. 2. Bisulca. 3. Camelidæ. 4. Tragulidæ. 5. Pecoridæ.

Fifth Phalanx Edentés. Toes subungulate; no teeth in front of the mouth.

Second Subclass PISCIFORM MAMMALIA.
1. Sirenidæ. 2. Cetacea.

Third Subclass IMPLACENTARIA.
1. Marsupialia. 2. Monotremata.

Also Prof. CARUS, in his Handbook of Zoology (see p. 3), adopts embryonic conditions as principal characters for classification. In the following outline of the system adopted by him, the position assigned to the Lemurs deserves special attention:—

A. MONODELPHIA.
I. DECIDUATA.
* *Unguiculata.*
a. Discoplacentalia.—1. Primates. 2. Chiroptera. 3. Insectivora. 4. Rodentia. 5. Prosimii.
b. Zonoplacentalia.—6. Carnivora. 7. Pinnipedia.
** *Ungulata.*—8. Lamnungia. 9. Proboscidea.
II. INDECIDUATA.
* *Ungulata.*—10. Artiodactyla. 11. Perissodactyla. 12. Natantia.
** *Unguiculata.*—13. Bruta.

B. DIDELPHIA.—14. Marsupialia.

C. ORNITHODELPHIA.—15. Monotremata.

According to the 'Report of the Council of the Zoological Society of London' (London, 1868), 531 Quadrupeds were living in the Menagerie in the course of the year 1867, and 25 species have bred in this establishment during the same time.

Mr. SCLATER has given a list of the different species of Mammals that have bred in the Menagerie of the Zoological Society of London during the past twenty years, and the number of instances in which each species has produced living young during the same period. Altogether 105 species bred in 499 instances, the proportion of breeding species to total number being 1 in 3·2. Proc. Zool. Soc. 1868, pp. 623–626.

Palæarctic Region. Although Prof. v. Brandt's researches into the development of the Mammalian Fauna of Northern Asia and Europe refer chiefly to prehistoric periods, and consequently do not fall within the limits of this Record, they are of so great an interest that we feel bound to draw attention to them by the following brief notice:—The author states his views on the subject at the end of his Zoogeogr. und Palæontol. Beitr. pp. 248–256. From a comparison of the remains of the Mammalian Faunas of the Tertiary and Quaternary periods in Europe and Northern Asia, it is evident, or at least very probable, first, that Northern Asia, in the Tertiary period, was inhabited by its present fauna, which, however, then comprised several forms now extinct; secondly, that the Quaternary Fauna of Europe was the result of an immigration from Northern Asia. There is at present no evidence whatever that man existed in the Tertiary period; but it is not probable that the whole of the Quaternary Mammalian fauna preceded the origin of man, as has been generally supposed hitherto, because the conditions of the Tertiary period were already favourable to his existence. The author enters, then, into an investi-

gation of the changes of the original Quaternary fauna, which were effected not only by terrestrial and climatic agencies, but also, in a considerable measure, by the agency of man. He distinguishes the following phases:—

1. In the first phasis this fauna flourished in Northern Asia, and comprised the Mammoth, Hairy Rhinoceros, Aurochs, Bison, Musk-Ox, Antelopes, Wild Sheep, Musk-Deer, Ibex, Reindeer, Deer, Roebuck, Wild Boar, Bears, probably Tiger, Hyæna, &c., and numerous Rodents. Man may have been coexistent with this fauna.

2. The second phasis may be taken from the spreading of this fauna into Middle, Southern, and Eastern Europe, to the time of the extinction of the Mammoth. The coexistence of man with the Mammoth in this period is beyond doubt; and although the people who assisted in its extermination belong to the prehistoric period, man may have lived in a higher state of culture in other parts of the globe (Egyptians, Assyrians).

3. The third phasis terminates with the extinction of the Reindeer in the southern half and centre of Europe, which continued to exist in Scotland down to the twelfth century. This period extends into the beginning of the Christian era.

4. The fourth phasis begins with the disappearance of the Reindeer in Western Europe, and extends to the extinction of the Aurochs (sixteenth century).

5. The fifth phasis is that of the present fauna.

Greenland. Mr. Robert Brown has written a long paper on the Mammalian Fauna of Greenland, Proc. Zool. Soc. 1868, pp. 330–362. He gives a history of the subject, enters upon the geographical distribution of the species, communicates his notes and observations on the habits of the terrestrial species, and, finally, treats of the doubtful and mythical species introduced into this fauna.—The same author has written on the Seals and Cetaceans observed by him in the seas of Greenland and Spitzbergen. Ibid. pp. 405–440, 533–556.

China. The Abbé Armand David gives a very instructive account of an excursion in Mongolia, Nouv. Arch. Mus. d'Hist. Nat. iii. 1867, Bull. pp. 18–96 (not concluded). He gives a list of 60 Mammalia (p. 26), the more interesting of which have been described by M. A. Milne-Edwards.

M. A. Milne-Edwards has continued his examinations of the Mammalia sent from Northern China (see Zool. Record, iv. p. 17). He mentions provisionally six other new species, Ann. Sc. Nat. viii. pp. 374–376. A full account has been commenced by him in Recherches Hist. Nat. Mammif. p. 67.

Palestine. For the present we have only shortly to refer to a paper on the Fauna of Palestine by Mr. Tristram, an abstract of which appeared in Proc. Roy. Soc. 1868, p. 316.

North-eastern Africa. An interesting account of an expedition to the Sudan, made with the intention of collecting living animals, has been given by Marno, Zoolog. Gart. 1868, pp. 81–94, 168–173, 212–216, 239–242.

Réunion. Dr. Vinson has written an article on the changes in the fauna of this island, which are entirely caused by the agency of man. Bull. Soc. Acclim. Paris, 1868, pp. 579–590, 625–635.

Madagascar. The discovery of a subfossil *Hippopotamus* in this island by M. Grandidier (*H. lemerlei*) is of great interest as regards geographical

zoology. A. Milne-Edwards, Compt. Rend. 1868, lxvii. p. 1165 (translated in Ann. & Mag. Nat. Hist. 1869, iii. p. 396).

India. Mr. Jerdon's book on Indian Mammals has been noticed above, p. 5.

Borneo. Prof. Peters enumerates the Bats collected by the Marquis Doria in Sarawak. Monatsber. Ak. Wiss. Berlin, 1868, p. 626.

Tasmania. Mr. Krefft, in his 'Notes on the Fauna of Tasmania,' enumerates 26 Mammalia, 8 of which are Placentalia.

United States. Dr. Cooper enumerates the Mammalia of Montana Territory. Amer. Natur. ii. pp. 528–538.

Cuba. J. Gundlach has given a list of the species known at present from Cuba. The greater portion are *Chiroptera*, of which he enumerates 18; 1 *Solenodon*, 3 species of *Capromys*, 3 of *Mus* (introduced), and 1 *Manatus*. The other Cetaceans are not known. Notes on the exact localities are added. Report. Fis.-nat. de Cuba, ii. pp. 40–56.

QUADRUMANA.

M. E. Alix has examined the papillary lines in the hand and sole of Quadrumana, comparing them with those of man and of those Mammals in which such lines occur. He enters on this occasion into considerations of the form, structure, and functions of hand and foot generally. The development of the papillary lines appears to him to be in accordance with the grade occupied by the animal in the class. They could not be used by themselves as a systematic character; but their knowledge is useful in confirming views obtained from other facts. Ann. Sc. Nat. viii. pp. 295–362; ix. pp. 5–42, pls. 2–5.

Troglodytes gorilla. Mr. S. H. Swayne gives the measurements of a skeleton in the Bristol Museum. Proc. Bristol Nat. Soc. 1868, pp. 39–41.

Colobus. Dr. Gray gives diagnoses of all the species known, and describes a new one under the name of *Colobus kirkii*, from Zanzibar. Proc. Zool. Soc. 1868, p. 180, pl. 15.—*Colobus palliatus* is described as a new species from East Africa by Peters, Monatsber. Ak. Wiss. Berlin, 1868, p. 637.

Cercopithecus. Dr. Gray gives a short systematic synopsis of the species in the British Museum. *L. c.* p. 182.

Macacus lasiotus, sp. n., Gray, *l. c.* p. 60, pl. 6, from China.

Macacus assamensis seems to be distinct from *M. rhesus*. Sclater, Proc. Zool. Soc. 1868, p. 566.

Cercocebus albigena extends down the northern bank of the Congo river. Sclater, *l. c.* p. 183.

Mico sericeus is described as a new species by Dr. Gray, *l. c.* p. 256, pl. 24.

Lemuridæ.—Dönitz demonstrates that the real canine tooth in the lower jaw is that tooth which is opposed and similar in form to the upper. Sitzgsb. Ges. ntrf. Freund. Berlin, 1868, Dec. 15, p. 32.

Lemur. Dr. F. Schlegel has compiled a paper on the Lemurs from the original observations of Dutch naturalists. Zoolog. Gart. 1868, pp. 1–10.

Nycticebus javanicus and *N. tardigradus.* Prof. van der Hoeven agrees with M. A. Milne-Edwards that these two species or varieties do not essentially differ in their dentition, but that he has never observed an example of the latter with two incisors only; and he adds that the second upper pre-

molar, as well as the three last molars, of *N. javanicus* has a talon directed inwards. Arch. Néerland. iii. 1868, p. 95.

Chirogaleus samati, sp. n., Grandidier, Rev. et Mag. Zool. 1868, p. 50, or Ann. Sc. Nat. 1867, viii. p. 294, from the west coast of Madagascar.

FERÆ.

Chiroptera.

The Chiroptera of Cuba, enumerated by Gundlach in Repert. Fis.-nat. de Cuba, ii. pp. 48–53, are:—1 *Macrotus*, 1 *Monophyllus*, 2 *Phyllonycteris*, 2 *Stenoderma*, 1 *Brachyphylla*, 1 *Mormops*, 2 *Chilonycteris*, 1 *Noctilio*, 4 *Dysopes*, 1 *Vespertilio*, 1 *Vesperus*, 1 *Nycticejus*, and 1 *Atalapha*.

The Chiroptera collected by the Marquis Doria in Sarawak are enumerated by Prof. Peters, Monatsber. Ak. Wiss. Berlin, 1868, p. 626.

Pteropus edwardsii. Prof. E. P. Wright has published his observations on this bat in the Seychelles. Ann. & Mag. Nat. Hist. 1868, ii. p. 436.

Prof. Peters (*l. c.*) has characterized the group *Glossophagæ*, to which he refers the following genera, the species with their synonymy being added:—1. *Glossophaga* (Geoff.) with *G. soricina*; 2. *Monophyllus* (Leach) with *M. redmanni*; 3. *Ischnoglossa* (Sauss.) with *I. nivalis*; 4. *Phyllonycteris* (Gundl.) with *Ph. poeyi*; 5. *Lonchoglossa* (g. n.) with *L. caudifera*; 6. *Glossonycteris* (g. n.) with *G. lasiopyga*, sp. n., Mexico; 7. *Chœronycteris* (Licht.) with *Ch. mexicana* (Tsch.) and *Ch. minor*, sp. n., p. 366, from Surinam. The skulls and dentitions of *Ischnoglossa nivalis* and *Glossonycteris lasiopyga* are figured.

Peropteryx leucoptera (Ptrs., see Record iv. p. 22) is the type of a new subgenus, *Peronymus*. Peters, *l. c.* p. 145.

Coleura seychellensis, sp. n., Peters, *l. c.* p. 367. Prof. E. P. Wright, who discovered this species in the Seychelles, has published some notes on it. Ann. & Mag. Nat. Hist. 1868, ii. p. 437.

Rhinolophus æthiops, sp. n., Peters, *l. c.* p. 637, East Africa.

Vespertilio schreibersii has been discovered by Hr. Jeitteles, the indefatigable investigator of the Austrian Fauna, in Lower Austria; it has not been previously observed north of the Alps. Verh. zool.-bot. Ges. Wien, 1868, pp. 121–124.

Vespertilio murinus. On its food, Jäckel, Zoolog. Gart. 1868, p. 117.

Vesperus (*Hesperopterus*) *doriæ*, sp. and subg. n., Peters, *l. c.* p. 626, Sarawak.—*Vesperus* (*Hesperopterus*) *kraussii*, sp. n., Peters, *l. c.* p. 638, Guinea.

Vesperugo molossus (Temm.) described by Peters, *l. c.* p. 639.

Insectivora.

Dr. Fitzinger has continued his papers on the animals of this family. His "Critical researches on the species of the natural family of *Sorices*," in Sitzgsber. Ak. Wiss. Wien, 1868, pp. 121–180, 425–514, 583–645, have the same object, and are precisely of the same character as the preceding publications, which we have noticed in Zool. Record, iv. pp. 24 & 28.

Sorex araneus. Prof. Giebel demonstrates that the absence of a premolar in the upper jaw is not of rare occurrence. Zeitschr. ges. Ntrwiss. xxxi p. 550.

Solenodon. Notes by Gundlach on its history and habitat. Repert. Fis.-nat. de Cuba, ii. pp. 44 and 53.

Felidæ.

Felis domesticus. Hr. Dönitz states that the differences said to exist between the skulls of the domestic and wild cats can be observed in a series of skulls of either race. Sitzgsber. Ges. ntrf. Freund. Berlin, 1868 (1869), p. 7.—Dr. Fitzinger has written on the variations of the Cat. Zool. Gart. 1868, pp. 51–60.—In an amusing article on the life of a domestic cat, Mr. W. Brown gives a record of her kittenings during 12 years; they were 25 in number, comprising 78 individuals. Proc. R. Phys. Soc. Edinb. 1865-66, p. 379.

Felis fontanieri is indicated as a new species from North China, by M. A. Milne-Edwards, Ann. Sc. Nat. viii. 1867, p. 375.

Canidæ.

Dr. Gray has examined the skulls of *Canidæ* and *Hyænidæ* in the British Museum, Proc. Zool. Soc. 1868, pp. 492–525. Besides the dentition, the form of the skull and of the post-orbital process are characters of which the author availed himself for the purpose of classifying these animals. He enumerates the species with their synonymy, and adds notes of the skulls contained in that collection. The classification adopted is the following:—

Fam. 1. Canidæ.

I. *Normal Canidæ.*

Sect. A. *Lupinæ.*

Subfam. 1. Lycaonina:—1. *Lycaon*; the skull of *L. venaticus* figured p. 496.

Subfam. 2. Canina.

a. Wolves:—2. *Icticyon.* 3. *Cuon* with four species; skull of *C. sumatrensis* figured p. 499. 4. *Lupus*, with six species; skull of *L. anthus* figured p. 503. 5. *Simenia* (g. n. p. 506), type *Canis simensis* (Rüpp.); skull figured p. 504. 6. *Chrysocyon* with two species.

b. Dogs:—7. *Canis* with four species; skull of bulldog figured p. 507.

c. Fox-tailed Wolves (South America):—8. *Lycalopex* with two species. 9. *Pseudalopex* with five species. 10. *Thous* (g. n., p. 514) with *Canis cancrivorus* and *C. fulvipes.*

Sect. B. *Vulpinæ.*

Subfam. 3. Vulpina.

d. Foxes:—11. *Vulpes* with seventeen species; skull of *V. bengalensis* figured p. 517. 12. *Fennecus* (g. n., p. 519) with four species; skull of *C. pallidus* figured p. 520. 13. *Leucocyon* (g. n., p. 521) with *C. lagopus.*

e. Bristle-tailed Foxes:—14. *Urocyon* with two species.

f. Raccoon Dog:—15. *Nyctereutes.*

II. *Aberrant Canidæ*, or *Viverrine Dogs.*

Subfam. 4. Megalotina, with *Megalotis.*

Fam. 2. Hyænidæ.

Hyæna, Crocuta, Proteles.

Canis familiaris. Mr. R. Brown communicates his observations on the Greenland Dog, Proc. Zool. Soc. 1868, p. 346.

Canis vulpes. The fox of Japan is not distinct from the European. Martens, Preuss. Exped. nach Ost-Asien, Zool. i. p. 152.—R. Dieck has described the subcutaneous muscles of the head of the fox. Zeitschr. ges. Ntrwiss. xxxi. pp. 218–223.—Hr. Dönitz describes a monstrous skull of a fox, resembling that of a bulldog. Sitzgsber. Ges. ntrf. Freund. Berlin, 1868 (1869), p. 21.

Proteles lalandii living in the menagerie of the Zoological Society of London, Proc. Zool. Soc. 1868, p. 530.

Mustelidæ.

Lutra. Prof. Giebel describes the skulls of *Lutra vulgaris, L. canadensis, L. paranensis, L. huidrobia, L. felina, L. leptonyx, L. inunguis.* Zeitschr. ges. Ntrwiss. xxxi. pp. 210–217.

Pteronura sandbachii is described and figured by Gray, Proc. Zool. Soc. 1868, p. 61, pl. 7; woodcuts of the skull are added.

Ursidæ.

Ursus nasutus is described as a new species by Mr. Sclater, Proc. Zool. Soc. 1868, p. 71, pl. 8, probably from some part of South America. He states that nineteen individuals, belonging to eighteen species of bears, are living in the menagerie of the Zoological Society of London.

Ursus maritimus. Mr. R. Brown communicates his observations, Proc. Zool. Soc. 1868, p. 344.

Meles. M. A. Milne-Edwards describes two new species from North China, *Meles leptorhynchus* and *Meles leucolæmus*, Ann. Sc. Nat. viii. 1867, p. 374.—Dr. Gray has examined the badgers of the Palæarctic region, especially with regard to characters derived from the skull; he finds that they may be divided into two groups, the first of which would comprise *M. taxus* and *M. anakuma*. The second had already been distinguished by Mr. Hodgson under the name of *Pseudomeles*, comprising *M. leucurus*, from Thibet, and a new species, *M. chinensis* (p. 207) from China, which may prove to be the same as *M. leptorhynchus* of Milne-Edwards. The skull of this species is figured. Proc. Zool. Soc. 1868, pp. 206–209.

Meles taxus. Messrs. Moseley and Ray Lankester describe a small premolar in the upper jaw, which does not appear to be represented in the milk-dentition. Journ. Anat. & Phys. iii. p. 79.

Phocidæ.

Dr. Gray has again taken up his researches into that most difficult subject, the distinction of the species of Eared Seals. [See Zool. Record, iii. p. 28 *et seq.*] In Ann. & Mag. Nat. Hist. 1868, i. p. 99, he examines the "Fur- and Hair-Seals of the Falkland Islands and Southern America," and the literature referring to them, and distinguishes the five following.—

1. The Falkland Seal of Pennant, *Arctocephalus falklandicus. Phoca hausvillii* (Lesson and Fischer) is probably to be referred to this form. Falkland Islands.

2. *Euotaria nigrescens* (Gray). This has been described by Peters as *Otaria falklandica*. Falkland Islands.

3. *Phocarctos hookeri* (Gray). This has been described by Burmeister (1866) as *A. falklandicus*. Falkland Islands.

4. *Otaria jubata*. The Seal which, when living in the Zoological Gardens in London (see Zool. Record, iv. p. 28), had been named *O. hookeri*, proves to be this species; it came from Cape Horn.

5. The *Otaria philippii* (Peters, see Zool. Record, iii. p. 30) ought not to be associated with *Arctocephalus nigrescens* (Gray), as it is more nearly allied to the *Otaria stelleri* from California.

On continuing these examinations (*l. c.* p. 215) the author convinced himself—

1. That the British-Museum specimen of *Arctocephalus falklandicus* is really a Falkland species, and did not come from the arctic regions, after comparing it with examples preserved in Edinburgh.

2. The author did not recognize this *A. falklandicus* among specimens brought from the Falkland Islands by Capt. Abbott, and believes that it may have been driven away by sealers, as also *Morunga elephantina*.

3. The species described by authors as coming from the Cape of Good Hope are reviewed, and a new species from the same sea is described under the name of *Arctocephalus nivosus* (p. 219).

Capt. Abbott, who has deposited specimens of Seals from the Falkland Islands in the British Museum, has communicated observations on four species, named by Mr. Sclater, to the Zoological Society (Proc. Zool. Soc. 1868, p. 189). They are the following:—

1. *Morunga elephantina*. It appears that it is still living, though rare in those islands.

2. *Otaria jubata*.

3. *Otaria falklandica*. This specimen is referred to *A. nigrescens* by Dr. Gray.

4. *Stenorhynchus leptonyx*.

Prof. Burmeister states that two species of Seals are found on the coasts of the Argentine Republic, viz. *Otaria jubata* (Forst.) = *O. ulloæ* (Tschudi, Peters), which is the female, = *O. godeffroyi* (Peters), and *Otaria falklandica* (Shaw) = *Arctocephalus nigrescens* (Gray). *Otaria philippii* (Peters) belongs to the same generic section as *Arctocephalus falklandicus*; it is the *Phocâ porcina* of Molina. Anal. Mus. Buen. Ayr. 1868, p. 303; Act. Soc. Palcont. p. xxxix; and in Zeitschr. ges. Ntrwiss. xxxi. pp. 294–301; also in Monatsber. Ak. Wiss. Berl. 1868, p. 180.

A lengthened paper on the history, habits, and geographical relations of the Seals of the Spitzbergen and Greenland Seas, by R. Brown, is published in Proc. Zool. Soc. 1868, pp. 405–440. The author concludes with notes on the commercial importance of the Seal-fisheries.

Otaria jubata. A report by Mr. Sclater on an expedition sent by the Zoological Society of London to the Falkland Islands for the purpose of obtaining living specimens, in Proc. Zool. Soc. 1868, pp. 527–529.

Otaria ulloæ (?) (an sp. n., *O. grayi*?). A skull described by J. M'Bain. Journ. Anat. & Phys. iii. p. 109.

Arctocephalus schisthyperoës [*schistuperus*] is described as a new species from a skull from the Cape of Good Hope. Turner, Journ. Anat. & Phys. iii. 1868, p. 113.

Phoca fœtida. Mr. Bartlett has observed that the newly born animal sheds its outer covering of fur and hair *after* birth. Proc. Zool. Soc. 1868, p. 402.

Trichechus rosmarus. Dr. Murie has published his observations on the morbid appearances of an example lately living in the Zoological Garden in Regent's Park. Proc. Zool. Soc. 1868, pp. 67–71.

RODENTIA.

Sciurus vulgaris. Notes on the gradual spreading of the Squirrel in parts of Northumberland and Southern Scotland, by G. Tate. Proc. Berwicksh. Nat. Club, 1868, pp. 440–442.

Sciurus dschinschicus. Note on "l'Ecureuil de Gingi" of Sonnerat, by Gray, Ann. & Mag. Nat. Hist. 1868, i. p. 309. It does not appear to have been recognized; it may be a variety of *Macroxus bicolor*, and certainly does not belong to *Xerus*.

Sciurus davidianus, figured by A. Milne-Edwards in Recherch. Hist. Nat. Mammif. pl. 16.

Pteromys melanopterus and *Pteromys xanthipes*, spp. nn., A. Milne-Edwards, Ann. Sc. Nat. viii. 1867, pp. 375, 376; they are figured in Recherch. Hist. Nat. Mammif. pl. 15 & pl. 14.

Castor fiber. 'The American Beaver and his Works,' Philad. 1868, by L. H. Morgan, is known to me from a notice only in Zool. Gart. 1868, p. 218. The reviewer speaks very highly of the scientific value of this work, which appears to be well illustrated.

Dr. Gray has examined the specimens of *Saccomyinæ* in the British Museum, Proc. Zool. Soc. 1868, pp. 199–206. He characterizes the species, which are arranged thus:—

I. Dipodomyina.

1. *Dipodomys.*

II. Heteromyina.

2. *Perognathus* with four species, one being described as new, *P. bicolor* from Honduras, p. 202.
3. *Abromys* (g. n.) *lordi*, sp. n., from British Columbia, p. 202 (= *Perognathus monticolor*, Lord).
4. *Cricetodipus* (Peale) with one or two species.
5. *Heteromys* with six species, the following being described as new:— *H. melanoleucus* from Honduras, p. 204, *H. longicaudatus*, p. 204, *H. irroratus* and *H. albolimbatus*, p. 205; these three from Mexico.
6. *Saccomys* with one species.

Dipus annulatus (M.-E.) figured by A. M.-Edwards in Recherch. Hist. Nat. Mammif. pl. 10.

Mus. Dr. Murie describes a rat, imported from Sydney or Hongkong, which cannot be determined with certainty; it may be a distinct species or merely a pale-coloured variety of *M. rattus*. Proc. Zool. Soc. 1868, pp. 157-158.

Mus decumanus, rattus, and *musculus* have been introduced into Cuba. Gundlach, Repert. Fis.-nat. de Cuba, ii. p. 55.

Mus nilagiricus, sp. n. ?, Jerdon, Mamm. Ind. p. 203.

Chiropodomys, g. n., Peters, Monatsber. Ak. Wiss. Berlin, 1868, p. 448. Sacculi buccales nulli; oculi auriculæque modica; labrum fissum; vibrissæ elongatæ; cranium et dentes muris; antepedes digitis 4 et verruca pollicari lamnata; scelides pentadactylæ, halluce lamnata; cauda elongata, squamata annulata, pilis setaceis brevibus, versus apicem longioribus vestita. *Ch. penicillatus*, sp. n., *l. c.* taf. 1, probably from Africa.

Siphneus. M. A. Milne-Edwards proves by the dentition that this genus is allied to *Arvicola*, and not to *Spalax*, as believed by F. Cuvier, who had examined a skull believed to be a *Siphneus*, but being in reality a *Spalax*. Compt. Rend. lxviii. p. 438.—A monograph of the genus has been commenced by the same author in Recherches Hist. Nat. Mammif. p. 71, where also *S. armandii* and *S. fontanieri* are figured, pls. 6 & 7.

Myodes torquatus. Mr. R. Brown confirms Middendorff's observation that *Mus grœnlandicus* (Traill) and *M. hudsonius* (Forst.) are not distinct. Proc. Zool. Soc. 1868, p. 349.

Hydrochœrus. Dr. Hensel states that a minute milk-molar is found in both jaws in the fœtus at an early period of its development. Sitzgsber. Ges. ntrf. Freunde Berlin, 1866, p. 28.

Capromys. Gundlach recognizes three species, viz. *fournieri, poeyi,* and *melanurus*, Repert. Fis.-nat. de Cuba, ii. pp. 46 & 54.

Lepus. An article on Hares, Rabbits, and the hybrids between them, by E. Gayot, in Compt. Rend. 1868, lxvii. pp. 987–989.—M. Arloing has examined the organs of reproduction of the Hare and Rabbit and the hybrid between them. Ibid. lxvi. p. 1267.

Lepus timidus. Prof. Giebel has noticed specimens of the light-coloured variety. Zeitschr. ges. Ntrwiss. 1868, xxxi. p. 68.

Lepus cuniculus. We mention here a work by W. Krause, 'Die Anatomie des Kaninchens. In topographischer und operativer Rücksicht bearbeitet.' Leipzig, 1868, 8vo, with 50 figures.

EDENTATA.

On the anatomy of the brain and submaxillary glands, see Pouchet in Robin, Journ. Anat. et Phys. 1868, pp. 658–675; and Compt. Rend. 1868, lxvi. pp. 670–673.

Myrmecophaga jubata. M. Pouchet's work on its anatomy has been noticed above (p. 6).—An account of an example living for some time in the Hamburg Zoological Garden is given by Dr. Noll, Zool. Gart. 1868, pp. 30–35.

Dasypus gigas. Notes on a skeleton, by Prof. Burmeister, in Anal. Mus. Buen. Ayres, 1867, Act. Soc. Paleont. pp. xxxii–xxxiv.

Dasypus peba. Mr. Flower describes the milk-dentition, Proc. Zool. Soc. 1868, p. 378 *.

Chlamydophorus retusus. Prof. Burmeister considers its generic separation (*Burmeisteria*, Gray) to be unnecessary. *L. c.* p. xxxvii.

PACHYDERMATA.

We refer to Prof. v. Brandt's 'Symbolæ Sirenologicæ' (see p. 3), which contains extensive researches into the osteological characters of the principal Pachyderm types.

Dr. Gray has examined the species of *Suidæ* in the British Museum (Proc. Zool. Soc. 1868, pp. 17–49). He characterizes the species and groups into which they are divided, adding the synonymy. He has paid much attention to the configuration of the skull, and mentions their more prominent peculiarities. After some general introductory remarks on the difficulties of understanding the affinities of the various species and breeds, he proceeds to arrange them thus :—

I. *Premolars permanent.*

Fam. 1. Suidæ.

A. Typical Swine (*Suina*).

a. Wild Swine.

1. *Sus* with 11 species, the Wild Boar of the Holy Land being distinguished as *Sus libycus* (p. 31).
2. *Porcula* with two species.
3. *Potamochœrus* with two or three species.

b. Domesticated Swine.

4. *Scrofa.* 5. *Centuriosus.*

B. Abnormal Swine (*Babirussina*).

6. *Babirussa.*

Fam. 2. Dicotylidæ.

7. *Notophorus.* 8. *Dicotyles.*

II. *Premolars deciduous.*

Fam. 3. Phacochœridæ.

9. *Phacochœrus.* The author recognizes one species only.

Potamochœrus penicillatus. Hartmann states that Heuglin's *Nyctichœrus hassama* is nothing but this species. Sitzgsber. Ges. ntrf. Freund. Berlin, 1868 (1869), p. 30.

Hippopotamus. Dr. Gray has given the figure of a fœtus. Proc. Zool. Soc. 1868, p. 491.

Hippopotamus liberiensis. We have mentioned above (p. 3) that the work of Messrs. Milne-Edwards contains a memoir on this species, pp. 43–66. On pls. 1-5 figures of the animal, skeleton, skull, and brain-cavity are given.

Rhinoceros nasalis. Mr. A. Murray does not believe in the existence of a Rhinoceros in Borneo. Proc. Zool. Soc. 1868, pp. 440–442.

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* Mr. Flower has overlooked the second edition of the monograph on the Edentata by Rapp (1852), who had observed the milk-teeth of *Dasypus peba* three years before Gervais.

Rhinoceros bicornis. A young male figured by Mr. Sclater, Proc. Zool. Soc. 1868, pl. 41.

Rhinoceros unicornis. A vertical section of a skull and a cast of the brain are figured by M. A. Milne-Edwards on occasion of his examination of *Stereoceros.* Ann. Sc. Nat. x. 1868, pls. 13 & 14.

Hyrax. Dr. Gray has reexamined the species of *Hyrax*, and drawn attention to cranial and dental characters by which divisions and species can be established which by a mere examination of the skins can scarcely be distinguished (Ann. & Mag. Nat. Hist. 1868, i. pp. 35–51) *. After introductory remarks on the literature of this genus, he gives the following arrangement of the groups and species, each being characterized by a diagnosis :—

a. HYRAX.		
a. Dorsal spot black.	1. *H. capensis.*	South Africa.
b. Dorsal spot yellow.		
* Fur harsh	2. *H. burtonii* (sp. n., p. 43).	N. and W. Africa.
	3. *H. welwitschii* (sp. n., p. 43).	Angola.
** Fur soft	4. *H. brucei* (sp. n., p. 44).	Abyssinia.
	5. *H. alpini* (sp. n., p. 45).	Abyssinia.
	6. *H. sinaiticus* (H. & E.).	Sinai.
β. EUHYRAX	1. *E. abyssinicus.*	Abyssinia.
γ. DENDROHYRAX	1. *D. dorsalis.*	West Africa.
	2. *D. arboreus.*	South Africa, Mossamb.
	3. *D. blainvillii.*	Hab. —— ?

Elephas indicus. Dr. Gray has given the figure of a fœtus, Proc. Zool. Soc. 1868, p. 491.

Equus caballus. An English illustrated translation of M. Du Huys's work, 'The Percheron Horse,' has appeared in New York, 1868, 12mo.

Equus caballus. M. A. Sanson has continued his examination of the Horse with five lumbar vertebræ [see Zool. Record, iii. p. 35]. It belongs to the Arab breed, of which, however, there is also a form with six lumbar vertebræ. This character being accompanied by others, especially in the form of the skull, it is evident that the two forms have a different origin, the one with five vertebræ coming from Africa, and that with six from Asia. They were originally two distinct species. Robin, Journ. Anat. et Phys. 1868, pp. 225–268; or Compt. Rend. 1868, lxvi. pp. 673–675.

Equus burchellii. On the time of gestation and parturition. Schmidt, Zool. Gart. 1868, p. 252.

RUMINANTIA.

Bos primigenius (seu *Bos taurus sylvestris*). Prof. Brandt has worked out a most interesting account of its geographical distribution during the various periods of its existence. Zoogeogr. Beitr. pp. 153–215, 257–258.

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* The author quotes Jäger's paper on *Hyrax* as published in 'Würzb. naturw. Jahresb.' This ought to be 'Württemberg. naturwiss. Jahreshefte.'

Bos bison. Prof. Brandt has published an account of its geographical distribution during the various periods of its existence. *L. c.* pp. 101–152.— M. Issakoff relates the capture of a Bison in the Caucasus. Bull. Soc. Acclim. Paris, 1868, pp. 145–146 (reported by Dr. Noll, Zool. Gart. 1868, p. 216).

Capra ibex is now restricted to the Cogne valley, on the right bank of the Dora Baltea, where about 300 individuals may be living. Von Beck-Peccoz, Zool. Gart. 1868, p. 76.

Antilope caudata figured by A. Milne-Edwards in Recherch. Hist. Nat. Mammif. pl. 23.

Hippotragus bakeri has been figured by Mr. Sclater; notes by himself and Sir S. Baker, Proc. Zool. Soc. 1868, p. 214, pl. 16.

Rupicapra. An albino is mentioned by Bruhin, Zoolog. Gart. 1868, p. 39.— On deformities of horns, F. v. Tschudi, ibid. pp. 111–113, with woodcuts.— Dr. v. Frauenfeld reports on individuals infested by *Cœnurus cerebralis.* Verh. zool.-bot. Ges. Wien, 1868, pp. 301-302.

Antilocapra. W. J. Hays confirms the recent observations on the shedding of its horns. Amer. Natur. ii. pp. 131–133. The various stages of development of the horns are figured.

Cervus canadensis. Mr. J. D. Caton has published a valuable paper on the American Deer in Trans. Ottawa Acad. Nat. Sc. 1868 (Amer. Nat. ii. p. 435).

Cervus tarandus. Prof. Brandt has published a detailed account of its geographical distribution during the various periods of its existence in Europe, Zoogeogr. Beitr. pp. 1–100, 256, 257. He examines the evidence we possess from fossil remains and from the records of the ancient Romans and Greeks; he treats of its occurrence in France, Scotland, and Poland in historical times, and of its distribution in the present period. In a supplementary chapter he considers especially the questions with regard to its immigration into Europe and the duration of its existence.

Mr. R. Brown has published his observations on the Reindeer in Proc. Zool. Soc. 1868, p. 352.

Cervus xanthopygus is indicated as a new species from North China by M. A. Milne-Edwards. Ann. Sc. Nat. 1867, viii. p. 376; it is figured in Recherch. Hist. Nat. Mammif. pl. 21.

SIRENIA.

Prof. v. Brandt's monograph 'Symbolæ Sirenologicæ' has been noticed above (p. 3).

CETACEA.

The great work of MM. van Beneden & Gervais has been mentioned above, p. 5.

We refer to Prof. v. Brandt's 'Symbolæ Sirenologicæ' for the numerous osteological and zoological details of this order (see p. 3).

Prof. van Beneden has published a list of the skeletons or parts of skeletons, arranged according to the museums or col-

lections in which they are contained. Bull. Ac. Roy. Belg. xxv. pp. 88–125.

Prof. van Beneden has made researches on the pelvis of Cetaceans; it is present in all Cetaceans, consisting of a single bone on each side, representing the ischium. There is no median (pubic) bone. In the Right Whales and *Megaptera* a completely ossified rudimentary femur is added, remaining cartilaginous in some *Balænopteræ*. *Balæna mysticetus* has a cartilaginous tibia, besides the osseous femur. *L. c.* xxv. pp. 428–433.

Mr. R. Brown has published his observations on the Cetaceans frequenting Davis Strait and Baffin's Bay in Proc. Zool. Soc. 1868, pp. 533–556; a great part of the paper is devoted to *Balæna mysticetus*.

Prof. Burmeister enumerates eight species of Dolphins, two of Catodonts, and four of Balænidæ as found in the seas off the coasts of the Argentine Republic. An. Mus. Buen. Ayres, 1868, pp. 301–311.

Balæna. Prof. van Beneden fixes the geographical distribution of the five species which he regards as well established thus:—1. *B. mysticetus* is restricted to the Glacial Sea, extending southwards into Baffin's Bay, and along the Siberian and Kamtschatkan coasts into the sea of Ochotsk; it does not extend as far as the north of Iceland. 2. *B. biscayensis*, the truly Atlantic species, extends from the coasts of temperate North America to Europe, reaching as far northwards as Iceland. 3. *B. japonica*, the species of the North Pacific, from China and Japan to the coast of North America, between 40° and 60° N. lat. 4. *B. australis*, the species of the South Atlantic, from the coast of South America, 35° and 50° S. lat., to South Africa. 5. *B. antipodarum*, the species of the South Pacific, extends in a rather narrow belt from New Zealand to the southern extremity of the American continent. The paper is published in Bull. Ac. Roy. Belg. 1868, xxv. pp. 9–21 (and also in Ann. Sc. Nat. ix. pp. 43–52), and illustrated by a map.

Dr. Gray has reviewed this paper, Ann. & Mag. Nat. Hist. 1868, i. pp. 242–247; having collected the positive evidence we possess of the geographical distribution of the species of Right Whales, he comes to the conclusion that the distribution as propounded by Prof. Van Beneden is founded on a theory, and not sufficiently proved by facts.

Prof. van Beneden has replied to the principal points of Dr. Gray's critical remarks, Bull. Ac. Roy. Belg. xxvi. p. 7. He states,—1, that the Right Whale of the Southern Indian Ocean is not sufficiently known to be admitted into the system; 2, that there is enough evidence to show that there are two species in the North Pacific, and that one of them is *B. mysticetus*; 3, that the form and arrangement of the first ribs is subject to variations on the two sides of the same individual, and, therefore, that this is not a character by which *B. cisarctica* (Cope) can be distinguished from *B. biscayensis*. The author figures two instances of asymmetry of the anterior ribs.

Balæna mysticetus. Prof. van Beneden has found the so-called "Bonnet" in a fœtus; he also describes the tongue, *l. c.* xxvi. pp. 186–195.

Balæna biscayensis. Prof. van Beneden makes observations on the geographical distribution of this species, on the occasion of the discovery of a rib at Furnes in Belgium. *L. c.* 1867, xxiii. pp.

Balænoptera. Hr. G. O. Sars examines critically the external and internal characters which have been used for the distinction of the species and divisions (Vidensk.-Selsk. Forhandl. 1868, pp. 31–74). He comes to the conclusion that many of them were merely individual variations, and partly dependent on age, and determines the specimens described by previous authors thus:—

1. *Lofoten Whale* (Sars, 1865) = *B. musculus*, mas jun.
2. *Christiana Whale* = *B. musculus*, fem. jun.
3. *B. arctica* (Schlegel) = *B. musculus*, mas jun.
4. *Physalus antiquorum* (Gray) = *B. musculus*, mas adult.
5. *Physalus duguidii* of 50 feet (Gray) = *B. musculus*, fem. med. æt.
6. *Physalus duguidii* of 45½ feet (Gray) = *B. musculus*, mas med. æt.
7. *Balæna tripennis, quæ rostrum acut. habet, et plicas in ventre* (Sibbald) = *B. musculus*, mas med. æt.
8. *Baleinoptère à bec* (Ravin) = *B. musculus*, mas jun.
9. *Balænoptera carolinæ* (Malm) may be really a distinct species, distinguished from *B. musculus* by its size.
10. Baleine d'Ostende = *Balænoptera gigas*, fem.
11. Kepokarnak of Greenland = *Balænoptera gigas*, fem.
12. *Balænoptera tenuirostris* (Sweeting) = *Balænoptera gigas*, fem. jun.
13. *Balæna tripennis, quæ max. infer. rotundam et superiore multo latiorem habet* (Sibbald) = *Balænoptera gigas*?, mas.
14. *Balæna rostrata* (Rudolphi) = *Balænoptera laticeps* (Gray), fem. jun.
15. *Balæna rostrata* (Fabr., Hunter) = *Balænoptera rostrata*, fem. jun.
16. *Beleinoptère museau-pointu* (Lacép.) = *Balænoptera rostrata*, fem. jun.
17. *Balænoptera acuto-rostrata* (Scoresby) = *Balænoptera rostrata*, fem. jun.
18. *Balæna longimana* (Rud.) = *Megaptera longimana*, mas.

Balænoptera sibbaldii. Prof. Reinhardt has carefully examined notes made by Hr. Hallas and captains of whaling-vessels on a whale found in the sea round Iceland, and called "Steypireyör" by the Icelanders. He had also received from them a skull (without mandible), atlas, and hyoid bone, of which he gives a detailed description, illustrated by woodcuts. He comes to the conclusion that it is the *Balænoptera sibbaldii*. He also states the reasons which induce him to refer the "Tunnolik" of the Greenlanders to this species. He agrees with Mr. Flower [see Proc. Zool. Soc. 1868, pp. 187-189] that Malm's *B. carolinæ* is most probably the same species. In conclusion, he adds the measurements of a male fœtus of the "Steypireyör." On this occasion the author also expresses his views as regards the genera of Fin-Whales lately proposed, which he regards as rather superfluous. Vidensk. Medd. naturh. Foren. Kjöbenh. 1868, pp. 178-201; or Ann. & Mag. Nat. Hist. 1868, ii. pp. 323-340.

Balænoptera rostrata. Messrs. Carter & Macalister have given a very detailed description of a female 14 feet long, and of its anatomy. Philos. Trans.

vol. clviii. pp. 201–261, pls. 4–7.—Dr. van Bambeke has described the skeleton of a young individual, Bull. Ac. Roy. Belg. xxvi. pp. 53–61.

Physeter. Mr. Flower has published an excellent monograph of the osteology of the Cachalot in Trans. Zool. Soc. vi. pp. 309–372, illustrated by plates 55–61. It is chiefly founded on a nearly perfect skeleton of an adolescent male from Tasmania, which is described in detail, and compared with other examples in the various collections. The position in the system formerly assigned to this genus by the author is corroborated by the present researches. He comes to the conclusion that the southern and northern Cachalots do not differ specifically.

Epiodon australis or *patachonicus* (see Zool. Record, iv. p. 39). Prof. Burmeister gives a most detailed account of the external characters, osteology, and anatomy of this Cetacean in An. Mus. Buen. Ayres, 1868, pp. 312–366. The memoir is illustrated by six plates.

Pontoporia blainvillii. Prof. Burmeister has published his account of this species (mentioned in Zool. Record, iv. p. 39) also in Anal. Mus. Buen. Ayres, 1867, Act. Soc. Paleont. pp. xix–xxii.

Monodon monoceros. Dr. van Bambeke has described the vertebral column of the Narwhal, Bull. Ac. Roy. Belg. xxvi. pp. 46–53.

Delphinus. Dr. van Bambeke describes the vertebral column of *D. orca, tursio,* and *globiceps, l. c.* xxvi. pp. 22–45, and the skull of *D. malayanus,* p. 45.

Clymene similis is described as a new species from the Cape by Dr. Gray, Proc. Zool. Soc. 1868, p. 146. Its difference from *Cl. obscura* is pointed out and illustrated by woodcuts.

Tursio truncatus. Dr. Gray describes and figures variations in skulls of animals from the same school, and of examples from other localities. *L. c.* pp. 560–562.

Grampus griseus. M. P. Fischer describes the external appearance and the anatomy of an example from the French coast. He adds a history of the species, and comes to the conclusion that *G. rissoanus* (F. Cuv.) is the same animal. Ann. Sc. Nat. viii. pp. 363–373.

Globiocephalus svineval. A fœtus extracted from a female 12 feet long was 3 feet in length. Gray, Ann. & Mag. Nat. Hist. 1868, i. p. 224.

Globiocephalus grayi, sp. n., Burmeister, Ann. & Mag. Nat. Hist. 1868, i. p. 52, pl. 2. figs. 2 & 3, from Buenos Ayres.

MARSUPIALIA.

In Zool. Record, iv. p. 40, we have communicated a note of Prof. Peters on the homologies of the quadrate bone. This author mentions incidentally that J. Müller also was not convinced of the correctness of Prof. Reichert's views on the subject. Prof. Reichert replies now in Monatsber. Ak. Wiss. Berlin, 1868, pp. 143–145. [See also next page.]

Halmaturus billardieri is common in South-eastern Victoria, and not *H. brachyurus,* which is from Western Australia. Krefft, Proc. Zool. Soc 1868, p. 2.

Myrmecobius fasciatus probably produces only four young at a time. Krefft, *l. c.* p. 3.

Phascolomys. Prof. M'Coy regards *Ph. setosus* as a distinct species, and *Ph. niger* as a variety of *Ph. platyrhinus.* Ann. & Mag. Nat. Hist. 1868, i. pp. 30-31.

Thylacinus breviceps, sp. n., Krefft, Ann. & Mag. Nat. Hist. 1868, ii. p. 296, pl. 17 (skull), Tasmania.

MONOTREMATA.

In opposition to the view defended by Prof. Peters with regard to the homologies of incus and malleus of Mammals, and os quadratum and articulary of the mandible of the other vertebrates [see Zool. Record, iv. pp. 40 & 41, and Sitzgsber. Ges. ntrf. Freund. Berlin, 1868 (1869), p. 5 (*Tachyglossus hystrix*)], Prof. Reichert recapitulates the conclusions arrived at by embryological researches. Sitzgsber. Ges. ntrf. Freund. Berlin, 1868 (1869), p. 5. [See also preceding page.]

AVES

BY

Alfred Newton, M.A., F.L.S., etc.

Judging merely from the amount of labour which the compilation of this 'Record' has required, and without actually counting the pages read, the extent of the ornithological literature of 1868 is not less than that of its immediate predecessor, which so far exceeded in bulk anything ever known before: yet it must be confessed that no publication of any very extraordinary merit has made its appearance during the past year. Still the number of works which come up to a good average standard is certainly increasing, and, as the following pages will testify, there seems to be scarcely any civilized country in the world where Ornithology is not being actively studied. The 'Oiseaux Fossiles' of M. Alphonse Milne-Edwards continues to furnish a source of the greatest general interest; the specialist may rejoice in the completion of Dr. Finsch's monograph of Parrots and the commencement of Mr. Sharpe's monograph of Kingfishers; while the progress of science in its highest branches has been successfully promoted by a continuance of Prof. Huxley's and Mr. Parker's researches, and the appearance of Mr. Darwin's 'Animals and Plants under Domestication.' The great illustrated works of Messrs. Gould, Elliot, and Sclater and Salvin offer also a strong attraction to those who are best pleased through the eye. In works confined to particular districts, that of Messrs. Schlegel and Pollen on Madagascar, just finished, and that of Herr von Pelzeln on the long-neglected results of Natterer's many years' wanderings in Brazil, deserve especial mention. The greatest novelty, perhaps, which it is our duty to record is Mr. Wallace's ingenious 'Theory of Birds' Nests,' though in truth it was actually promulgated in 1866. There is accordingly no reason to fear that Ornithology is not in a prosperous condition; and, in conclusion, we have as before to return our thanks to many friendly hands for assistance rendered to us in our somewhat wearisome task*.

* We regret to say that the concluding *Heft* of the 'Journal für Ornithologie,' though bearing date "November 1868," was not sent out by its

BIBLIOGRAPHY.

Hartlaub, Gustav. Bericht über die Leistungen in der Naturgeschichte der Vögel während des Jahres 1867. Archiv für Naturg. Jahrg. xxxiv. Band ii. pp. 159–206. Berlin: 1868.

Dr. Hartlaub's *Twenty-second* Annual Report on Ornithology claims, as usual, the first place in our long list of works. We are glad to find that he has abandoned the arrangement he adopted a few years since (Zool. Record, iii. p. 44), and has in this Report followed one in defence of which more can be said—at least by ourselves.

Crotch, G. R. Letter concerning the dates at which the various *livraisons* of Temminck and Laugier's 'Nouveau Recueil de Planches coloriées d'Oiseaux' were published. Ibis, 1868, pp. 499, 500.

Of the hundred and two *livraisons* of which this work consisted, the exact date of publication of all but nine (and even of these approximately) is given. With this table before him, the student has no difficulty in ascertaining the date of almost any name applied by Temminck; for each sheet bears with its "signature" the number of the *livraison* in which it appeared. The utility of this table is self-evident, particularly as it turns out there was considerable irregularity in the publication: thus Livr. 41 was published 27 Dec. 1823, and Livr. 43, 28 Feb. 1824, while Livr. 42 did not appear till 26 Feb. 1825!

Gurney, J. H. Notes on Mr. Layard's 'Birds of South Africa.' [See "Ethiopian Region."]

König-Warthausen, Richard. Zur älteren Literatur. Journ. für Orn. 1868, pp. 246–248.

A few extracts from the 'Museum Wormianum' (Lugd. Batav.: 1655).

Newton, Alfred. Additional Notes on Mr. Layard's 'Birds of South Africa.' [See "Ethiopian Region."]

Includes also notes on Sir Andrew Smith's 'Report of the Expedition for Exploring Central Africa,' and papers in the 'South-African Quarterly Journal.' Further notes on these last, and also on his 'Catalogue of the South-African Museum,' are also given (Ibis, 1868, pp. 502, 503).

English publishers till the middle of May 1869; so that, with every disposition to strain a point in its favour, we have felt ourselves compelled to exclude its contents from the present Record. The 'Proceedings' of the Philadelphia Academy we have not been able to see entire; and for a knowledge of such of the papers included in them as we have noticed we are indebted to the kindness of their authors.

Salvadori, Tommaso. Studio intorno al lavori ornitologici del Professore Filippo de Filippi. Atti della R. Accad. Sc. di Torino, 1868, pp. 257–296.

A careful abstract of, and commentary on, the ornithological labours of the deceased naturalist, including identifications, more or less precise, of several species (particularly of the families *Picidæ, Formicariidæ, Cœrebidæ, Timaliidæ, Laniidæ, Campephagidæ, Turdidæ,* and *Sylviidæ*) described by him as new. A species of *Alaudidæ* is for the first time separated as new.

Sundevall, C. J. Les Oiseaux d'Afrique de Levaillant, critique de cet ouvrage. Rev. et Mag. de Zool. 1868, pp. 40–43, 86–90, 114–117, 262–267.

The conclusion of M. Olph-Galliard's translation before noticed (Zool. Record, ii. p. 55, iii. p. 45, iv. p. 44). A considerable number of important corrections are appended to the last paper (pp. 265–267).

THE GENERAL SUBJECT.

Altum, B. Der Vogel und sein Leben. Münster: 1868. Imp. 8vo, pp. 240.

We have not seen this work; but from the mention made of it, in anticipation, by Dr. Hartlaub (Bericht u. s. w. pp. 164, 165) we imagine that it is as much of a psychological as of an ornithological nature. [*Cf.* F. C. Noll, Zool. Garten, 1868, p. 159; A. & K. Müller, Journ. für Orn. 1868, pp. 265–284, 340–352.]

Brehm, A. E. Das Thierleben—Abtheilung Vögel. Hildburghausen: 1865–67. 2nd ed. ("Das Leben der Vögel.") Glogau: 1867. 8vo, pp. 650.

A popularly written work, with, in some cases, pretty woodcuts. The three plates of eggs are by Bädeker, and are good examples of that oologist's style. [*Cf.* Journ. für Orn. 1868, pp. 58–65.]

Carus, J. Victor. Handbuch der Zoologie. Erster Band. Wirbelthiere, I. Hälfte. Leipzig: 1868. 8vo, pp. 432.

We can only indicate the systematic arrangement adopted by the author. He divides the class *Aves* (pp. 191–368) into Orders and Families, as follows:—

I. Psittaci: (1) *Plictolophinæ,* (2) *Sittacinæ,* (3) *Psittacinæ,* (4) *Trichoglossinæ,* (5) *Strigopinæ.*

II. Coccygomorphæ: (1) *Rhamphastidæ,* (2) *Capitonidæ,* (3) *Galbulidæ,* (4) *Trogonidæ,* (5) *Bucconidæ,* (6) *Cuculidæ,* (7) *Musophagidæ,* (8) *Coliidæ,* (9) *Bucerotidæ,* (10) *Alcedinidæ,* (11) *Meropidæ,* (12) *Upupidæ,* (13) *Coraciidæ,* (14) *Momotidæ.*

III. Pici: (1) *Jyngidæ*, (2) *Picumnidæ*, (3) *Picidæ*.

IV. Macrochires: (1) *Caprimulgidæ*, (2) *Cypselidæ*, (3) *Trochilidæ*.

V. Passerinæ: (Suborder i.) Clamatores, (1) *Phytotomidæ*, (2) *Cotingidæ*, (3) *Tyrannidæ*, (4) *Anabatidæ*, (5) *Pteroptochidæ*, (6) *Menuridæ*, (7) *Formicariidæ*, (8) *Pittidæ*; (Suborder ii.) Oscines, (1) *Ploceidæ*, (2) *Fringillidæ*, (3) *Tanagridæ*, (4) *Mniotiltidæ*, (5) *Motacillidæ*, (6) *Alaudidæ*, (7) *Sylviidæ*, (8) *Maluridæ*, (9) *Turdidæ*, (10) *Cœrebidæ*, (11) *Meliphagidæ*, (12) *Nectariniidæ*, (13) *Hirundinidæ*, (14) *Ampelidæ*, (15) *Muscicapidæ*, (16) *Campephagidæ*, (17) *Dicruridæ*, (18) *Oriolidæ*, (19) *Laniidæ*, (20) *Timaliidæ*, (21) *Troglodytidæ*, (22) *Certhiidæ*, (23) *Epimachidæ*, (24) *Paridæ*, (25) *Icteridæ*, (26) *Sturnidæ*, (27) *Paradiseidæ*, (28) *Corvidæ*.

VI. Raptatores: (Tribe i.) Strigomorphæ, (1) *Strigidæ*; (Tribe ii.) Grypomorphæ, (1) *Cathartidæ*; (Tribe iii.) Aetomorphæ, (1) *Gypaetidæ*, (2) *Vulturidæ*, (3) *Gypohieracidæ*, (4) *Falconidæ*; (Tribe iv.) Œstuchomorphæ, (1) *Gypogeranidæ*.

VII. Gyrantes: (Tribe i.) Inepti, (1) *Didídæ*; (Tribe ii.) Pleiodi [*lege* Pliodi], (1) *Didunculidæ*; (Tribe iii.) Columbæ, (1) *Treronidæ*, (2) *Columbidæ*, (3) *Calœnadidæ*, (4) *Gouridæ*.

VIII. Rasores: (1) *Pteroclidæ*, (2) *Turnicidæ*, (3) *Tetraonidæ*, (4) *Phasianidæ*, (5) *Megapodiidæ*, (6) *Cracidæ*, (7) *Opisthocomidæ*.

IX. Brevipennes: (1) *Struthionidæ*, (2) *Rheidæ*, (3) *Casuarinæ*, (4) *Dinornithidæ*, (5) *Apterygidæ*.

X. Grallæ: (1) *Scolopacidæ*, (2) *Charadriidæ*, (3) *Chionididæ*, (4) *Parridæ*, (5) *Otididæ*, (6) *Dicholophidæ*, (7) *Rallidæ*, (8) *Psophiidæ*, (9) *Rhinochetidæ*, (10) *Gruidæ*.

XI. Ciconiæ: (1) *Ardeidæ*, (2) *Scopidæ*, (3) *Ciconiidæ*, (4) *Hemiglottides*.

XII. Lamellirostres: (Suborder i.) Odontoglossæ, (1) *Phœnicopteridæ*; (Suborder ii.) Chenomorphæ, (1) *Palamedeidæ*, (2) *Cygnidæ*, (3) *Anseridæ*, (4) *Plectropteridæ*, (5) *Tadornidæ*, (6) *Anatidæ*, (7) *Fuligulidæ*, (8) *Erismaturidæ*, (9) *Mergidæ*.

XIII. Steganopodes: (1) *Pelecanidæ*, (2) *Sulidæ*, (3) *Tachypetidæ*, (4) *Phalacrocoracidæ*, (5) *Plotidæ*, (6) *Phaethontidæ*.

XIV. Longipennes: (1) *Procellariidæ*, (2) *Laridæ*.

XV. Urinatores: (1) *Colymbidæ*, (2) *Alcidæ*, (3) *Sphenisciдæ*.

XVI. Saururæ: (1) *Archornithidæ*.

Most of the characters used in distinguishing these groups are external. The families are frequently subdivided into

subfamilies; and though personally we do not at all agree with the learned author, it is not to be denied that this work will be found very useful to the general student.

Collingwood, Cuthbert. Rambles of a Naturalist on the Shores and Waters of the China Sea, &c. London: 1868. 8vo, pp. 445.

The author proceeded by the overland route, and, beside China, visited Formosa, Borneo, and Singapore, returning by the Cape of Good Hope, St. Helena, Ascension, and the Azores. His attention was chiefly turned to the lower animals, and the work contains few ornithological notices. [*Cf.* Ibis, 1868, pp. 473, 474; 1869, pp. .]

Cretté de Palluel, A. Mémoire sur les Oiseaux acridiphages ou mangeurs de Sauterelles. Bull. de la Soc. Impér. zool. d'Acclimatation, 1868, pp. 257–267. (*Cf. tom. cit.* pp. 607–610.)

The species chiefly dwelt on belong to *Sturnidæ*; but many others of different families are briefly noticed, and their utility in destroying locusts and grasshoppers especially mentioned.

Darwin, Charles. The Variation of Animals and Plants under Domestication. 2 vols. 8vo, pp. 411 and 486. London: 1868.

The author's object is to give, under the head of each species, such facts as he has collected, showing the amount of variation it has undergone while under man's dominion. In one case only, that of the tame Pigeon, has he fully described the chief races, their history, the amount and nature of their differences, and the probable steps by which they have been formed. Tame Fowls and Ducks are also considered with considerable fulness. Of course this information is made to bear upon Mr. Darwin's well known theory as to the origin of species. What may be called the special part of this work occupies nearly the whole of the first volume; the remainder, including the consideration of the remarkable "hypothesis of Pangenesis," promulgated by the author, hardly comes within the range of a 'Record' like the present, and we naturally limit ourselves to an abstract of the principal results given by him with respect to the *Fringillidæ*, *Columbidæ*, *Phasianidæ*, and *Anatidæ*, which will be found under those heads respectively, only remarking that many most interesting facts are to be found in the second volume of this work, and promising, as a general statement, that he believes that the various domesticated animals of those families have each sprung from a single species [*vide suprà* "Mammalia," p. 2]. [*Cf.* Ibis, 1869, pp. 218, 219; Am. Nat. 1868, pp. 547–553; F. C. Noll, Zool. Garten, 1868, pp. 351, 352.]

Giglioli, H. H. Letter on the Voyage of the 'Magenta.' Ibis, 1868, pp. 497–499.

Gives an outline of the course sailed, and mentions a few objects of interest procured. The ornithology of the voyage is to be published by the author in conjunction with Dr. Salvadori.

Gould, John. On four New Species of Birds. Proc. Zool. Soc. 1868, pp. 218–221.

[See *Rhamphastidæ*, *Timaliidæ*, *Sturnidæ*, and *Podicipidæ*.]

Huxley, T. H. On the Animals which are most nearly intermediate between Birds and Reptiles. Proc. Roy. Instit. Gr. Britain, Feb. 7, 1868, pp. 10. Reprinted Ann. & Mag. N. H. 4th ser. ii. pp. 66–75.

The passage between Reptiles and Birds, on the principle of Evolution which the author adopts, is not by way of the Pterodactyls, but rather through the *Dinosauria*, and *Compsognathus* is the nearest approximation to the "missing link,"—a conclusion much the same as that of Prof. Cope (Zool. Rec. iv. p. 45).

——. Letter on the Classification of Birds. Ibis, 1868, pp. 357–362.

In reply to some remarks (*vide infrà*, Newton, Alfred) on his paper noticed last year (Zool. Rec. iv. pp. 46–49). In every group there are two kinds of characters, (1) those which are *diagnostic* and (2) those which are *common* to others. The diagnosis may also rest not merely on a particular character confined to the group, but on a peculiar combination of characters; and the value of characters for classification must be argued *à posteriori*. In the case of the *Schizognathæ*, no other common and yet distinctive character, save that drawn from the palatal structure, can be assigned; and as much could probably be said for the author's other suborders. All classification by logical categories is, however, more or less artificial—the goal is that of a genetic classification. Classification by gradation is another stage in the same progress, and must not be confounded with the ultimate result, though it probably represents a true genetic classification more nearly than any other arrangement can do. The *Tinamomorphæ* among the *Carinatæ* approach nearest to the *Ratitæ*; and the great majority of the *Carinatæ* fall into one or other of four series, which diverge directly or indirectly from the *Tinamomorphæ*.

These series are then indicated in a tabular form; but the results are more fully given in the paper next to be noticed.

——. On the Classification and Distribution of the *Alectoromorphæ* and *Heteromorphæ*. Proc. Zool. Soc. 1868, pp. 294–319, with Map.

Though the title of this paper would lead the reader to suppose it ought more properly to come into our special part, a very slight acquaintance with its contents will show that we are justified in treating a portion of it as belonging to the General Subject.

Professedly the threefold object of this interesting treatise is to discuss:—1st, the proper limits of the group *Alectoromorphæ* and its subdivisions; 2ndly, the relations of sundry outlying forms, commonly regarded as Gallinaceous birds, to the *Alectoromorphæ* and adjacent groups; and 3rdly, the geographical distribution of the *Alectoromorphæ* in relation to geographical distribution generally. Leaving the details of the first two divisions to be given under our heading of Gallinæ, we pass to the third, wherein the author brings together a long string of most important facts bearing on the whole question of zoogeography. Taking examples, not only from the class *Aves* generally, but also from some of the *Mammalia*, he shows that the Nearctic Region of Mr. Sclater is really far more closely allied to the Palæarctic than to the Neotropical—and further that, as Dr. Pucheran believes (Zool. Rec. iii. p. 47), the faunas of the Indian and Ethiopian Regions are much more nearly connected with one another and with that of the Palæarctic than with that of the Australian Region. Thus the great frontier line is latitudinal rather than longitudinal, and accordingly we ought rather to speak of an *Arctogæa* and a *Notogæa* than (with Mr. Sclater) of a *Neogæa* and a *Palæogæa* as the primary divisional areas.

In regard to the secondary divisions, he does not so much object to the principles of Mr. Sclater, finding them to answer in great measure to those suggested by the distribution of the *Alectoromorphæ*; but Prof. Huxley thinks it would be convenient to recognize a northern circumpolar "province" as distinct from the Nearctic and Palæarctic Regions*; and, more than this, he looks upon the Australian Region ("Australasia") as being so very different, not only from his "Aretogæa," but also from the Neotropical ("Austro-Columbia"), that a good case might be made out for regarding it as a primary division. Still further, he is disposed to give a similar distinction to New Zealand; and thus the earth's surface, if this view were admitted, would be divided into four primary Regions:—I. Aretogæa; II. Austro-Columbia; III. Australasia; and IV. New Zealand. Some further remarks of very great interest follow: it will perhaps be enough here to mention that their upshot is to show the probability of the first three of the Regions just named having been as distinct in the early Tertiary epoch as they are now.

Lewis, Grace Anna. Natural History of Birds. Lectures on Ornithology. Part i. Philadelphia: 1868. 12mo, pp. 32.

* Herr von Pelzeln has wished to establish an "Antarctic Region" (Zool. Rec. ii. pp. 57, 58), and Prof. Baird a "West-Indian Region" (*op. cit.* iii p. 59). Neither of these suggestions, any more than that above given of Prof. Huxley's, seems to us to be at present fully justifiable.

This work we have not seen. It is well spoken of by a reviewer (American Naturalist, 1868, pp. 554, 555).

Mäklin, F. W. Vetenskapliga Grunder für Bestämmandet af Fogelarternas Ordningsföljd inom slägten och grupper. Helsingfors: 1867. 8vo, pp. 131.

On the proportion between the dimensions of various parts of the skeleton the capability of flight depends; and this the author considers to be the surest ground for the systematic arrangement of birds. If the power of flight or, perhaps more correctly, the disposition for a more or less remarkable flight, be represented by v, the length of the humerus by h, that of all the wing-bones by a, and that of the trunk by t, then $v=\frac{a-h}{h}.\frac{a}{t}$. The dimensions of 102 specimens, belonging to upwards of 90 species, are minutely given to this end, and a list of the results obtained given. Thus *Struthio camelus* stands with 0·79 as what we may call its "figure of merit;" *Gallus domesticus* with 1·67, and so on till that of *Hirundo rustica* is found to be 3·88, and *Cypselus apus* 5·76. A good many remarks are also made on the sternal apparatus of birds.

Milne-Edwards, A. Recherches Anatomiques et Paléontologiques pour servir à l'histoire des Oiseaux Fossiles de la France. Livr. 18–25. Paris: 1868. 4to, plates.

With the twenty-second part, the text of the first volume of this most important work is brought to a close. In includes, beside the groups mentioned in our notice last year (Zool. Rec. iv. pp. 49–50), those of the "Totanides" (*Scolopacidæ* and *Charadriidæ*) and "Ciconides" (*Ciconiidæ* and *Tantalidæ*), the former containing a new genus, and the latter two. *Hydrornis natator* and *Dolichopterus viator* (*tom. cit.* p. 122) are spoken of as "Palmipèdes" of uncertain position, the first having affinities both with the "Lamellirostres" and the "Longipennes." The second volume begins with the "Gruides" (*Gruidæ*), with three new species, and goes on with "Phœnicoptérides" (*Phœnicopteridæ*), with three new genera and eight new species (!), and the "Ardéides" (*Ardeidæ*), with one new species. The "Rallides," of which a considerable number of the remains of extinct species are figured, will apparently follow; but not having as yet received any of the letterpress relating to them, we at present suspend any notice of this group.

The method of treatment which we described last year is still pursued, and the work deserves all that we can say in its praise. The new species will be found named in our special part. [*Cf.* Ibis, 1868, pp. 220–222; 1869, pp. 218–220.]

Newman, Edward. The Death of Species. Zoologist, Sec. Ser. pp. 1345–1358, 1385–1395.

As some of the statements on which the opinions advanced are founded seem to have been gathered from authorities having very little acquaintance with the facts, we may hold ourselves excused from entering further upon the philosophy of this series of papers (which is being yet continued) than to say that the author is opposed to any theory of Evolution, and especially to Mr. Darwin's. The instances drawn from the Class of birds are eight in number (pp. 1352–1355), and one accidentally erroneous statement is subsequently corrected (p. 1483).

Newton, Alfred. Remarks on Prof. Huxley's proposed Classification of Birds. Ibis, 1868, pp. 85–96.

After giving a brief sketch of Prof. Huxley's arrangement (Zool. Rec. iv. pp. 46–49), the opinion is expressed that a scheme of classification composed solely with reference to one character will never lead to a true comprehension of the system of Nature. The principles laid down by him are shown to consist of two kinds of "characters," those which are diagnostic and those which are not; and those drawn from the structure of the palatal bones prove, on investigation, to come into the category last named, while many of the former are of the other kind. Other zoologists, proceeding by other routes, have arrived at some of the same conclusions as he has—particularly as to the affinity of the *Charadriidæ* and *Scolopacidæ* [*Limicolæ*, Nitzsch] and allied groups to the *Laridæ*, thus forming his "suborder" *Schizognathæ*; but *Dicholophus* and *Crax* seem to form exceptions to the very characteristic from which that is named. Similar exceptions occur among the *Desmognathæ* and *Ægithognathæ*, and also among the further subdivisions, as *Grus antigone* in the *Geranomorphæ* and *Procellaria gigantea* in the *Cecomorphæ*. Prof. Huxley's division of the *Aetomorphæ* (*Accipitres*) meets with more approval. [*Cf.* Journ. Anat. & Phys., May 1868, pp. 390, 391. *Vide suprà*, Huxley, T. H.]

Owen, Richard. On the Anatomy of Vertebrates. Vol. III. London: 1868.

Though this volume is devoted to a consideration of Mammalia, it is necessary for us to notice it here, on account of the systematic views expressed by the author in the "Zoological Index" appended to it (pp. 847–849). These are not quite the same as those which were manifested in the preceding volume (Zool. Rec. iii. pp. 67, 68). The Class *Aves* is divided into three great groups:—(A) Altrices, including the Orders *Raptores*, *Scansores*, *Volitores*, and *Cantores*; (B) Præcoces, comprising the Orders *Rasores*, *Cursores*, *Grallatores*, and *Natatores*; and (C) Uroioni [potiùs *Uræoni*], of which *Archæopteryx* is the sole representative. Thus it will be seen that the *Cursores*, which was before declared (vol. ii. p. 12) not to be a natural Order, is again restored; but it is said (iii. p. 848) to be synonymous

with "*Struthionidæ*," and the genera *Rhynchotis* and *Tinamus* are comprehended in it, while *Notornis* is referred to *Grallatores* A place is also assigned to *Archæopteryx* for the first time by Prof. Owen.

Pettigrew, J. B. On the Mechanical Appliances by which Flight is obtained in the Animal Kingdom. Trans. Linn. Soc. xxvi. pp. 197–277, pls. xii.–xv.

We last year mentioned (Zool. Rec. iv. p. 50) the abstract of this paper, the subject of which hardly comes within our province. The illustrations are very good. (*Cf.* Ibis, 1868, p. 476.)

Sclater, P. L., and Salvin, Osbert. Exotic Ornithology. Parts V.–VIII. London: 1868. Imp. 4to, pp. 65–128, pls. xxxiii.–lxiv.

The four parts of this work which have been published during the last year are on the same plan as those which preceded them (Zool. Rec. iii. p. 48, iv. p. 51). The species figured are all American, and will be mentioned in our notice of the families to which they belong. Complete lists of the New-World species of *Scops*, *Chætura*, and *Laterirallus* are given. (*Cf.* Ibis, 1868, pp. 336, 337; 1869, pp. 109, 110.)

Wagner, Moritz. Ueber die Darwin'sche Theorie in Bezug auf die geographische Verbreitung der Organismen. Sitzungsb. k. bayer. Akad. Wissensch. 1868, i. pp. 359–395.

——. Die Darwin'sche Theorie und das Migrationsgesetz der Organismen. Leipzig: 1868. 8vo, pp. 62.

The second of these papers is a separate reprint of the first, with the addition of a few unimportant details. The author does not use the word "migration" in the special sense commonly ascribed to it by ornithologists, but seems to mean by it any shifting of abode [see "Mammalia," p. 2]. Such a "migration" he contends is necessary before Natural Selection can act; but this, as it seems to us, does not at all invalidate the theory of Mr. Darwin, who, so far as we know, has always maintained the power of Natural Selection to take advantage of any change of circumstances whatsoever, and has never professed that the process can act without opportunity. The ornithological examples cited by Prof. Wagner are not numerous (pp. 13, 31, 43) and do not call for any special remark.

PALÆARCTIC REGION.

Altum, B. Eine ornithologische Morgenexcursion. Journ. für Orn. 1868, pp. 206–211. [See also Homeyer, Eug. F. von.]

This has chiefly to do with the time at which various species begin their song or cries. [*Cf.* Jenyns's 'Observations in Natural History' (London: 1846), pp. 94–102.]

Barnard, M. R. (See Paijkull, C. W.)

Betta, Edoardo de. Sulla straordinaria od accidentale Comparsa di alcune specie di Uccelli nelle Provincie Venete e sulle cause rispettive Note ed Osservazioni. Venezia: 1865. 8vo, pp. 32. (From Atti dell' Istituto Veneto, 3rd ser. vol. x.)

The occurrence of a good many stray birds in Venetia is enumerated, and the appearance of *Syrrhaptes paradoxus* in 1863–64 especially dwelt upon.

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: 1867–68. Folio. Vol. i. fascicoli xvi.–xxvi., Vol. ii. fascicoli i.–ix.

As the above shows, great progress has been made in this work since we last noticed it (Zool. Rec. iv. p. 52); and it quite sustains the character of it then given. A list of the species whose young and eggs are figured, will be found under the heads "Neossology" and "Oology" respectively. [*Cf.* C. Bolle, J. f. O. 1868, pp. 263–265.]

Bruhin, P. Th. A. Der "hängende Stein" bei Bludenz—seine Ornis und Flora. Zeitschr. für die gesammt. Naturwissensch. 1868, pp. 301–304.

The ornithological portion (p. 302) is very brief and of local interest only.

Collett, Robert. Norges Fugle, og deres geographiske Udbredelse i Landet. Christiania: 1868, pp. 80. (Separately printed from the Vidensk.-Selsk. Forhandlinger for 1868.)

A good list of the Birds of Norway, with brief notes showing when and where they occur in that country. It includes 248 species. [*Cf.* Ibis, 1869, pp. 225–227.]

Cope, Edward D. The Birds of Palestine and Panama compared. [See "Neotropical Region."]

Droste, Ferdinand von. Zweiter Nachtrag zu dem Verzeichniss der Vögel Borkum's. Journ. für Orn. 1868, pp. 37–46.

In continuation of the observations before noticed (Zool. Rec. ii. p. 62, iii. p. 49). Of little more than local interest.

Dybowski, B., and Parrex, A. Verzeichniss der während der Jahre 1866 und 1867 im Gebiete der Mineralwässer in Daurien beobachteten Vögel. Journ. für Orn. 1868, pp. 330–339.

A list of the birds of this interesting locality, which lies beyond the Jablonnoi Mountains, forming the watershed between the Arctic and the Pacific Oceans. Darasun is situated on the river Tura (the waters of which flow into the Ingoda, and

finally into the Amoor) in about lat. 51° 10′ N. and 113° E. To the north and west lie the spurs of the Jablonnoi chain, to the south and east the hilly Aginer steppe. The forests are chiefly composed of larch, with firs in the valleys and stout pines on the mountains. One hundred and nine-three species are enumerated, some of them of great rarity; but the notes respecting them are unfortunately meagre, and nearly all were met with by Herr Radde (Reisen im Süden von Ost-Sibirien, Bd. ii.), *Turdus pelios*, Bp. [!], being perhaps the chief exception. The paper concludes with a table showing the number of eggs laid by a good many of the birds whose nests were found by the authors.

Giebel, C. G. Vogelschutzbuch. Die nützlichen Vögel unserer Aecker, Wiesen, Gärten und Wälder. Zweiter unveränderter Abdruck. Berlin: 1868.

This work we have not seen. The writer of a short notice (Zeitschr. gesammt. Naturwissensch. 1868, p. 338) speaks well of it.

Gould, John. The Birds of Great Britain. Parts xiii. (August 1, 1868) and xiv. (September 1, 1868.)

The customary two parts of this magnificent work. The species figured are named under the genera to which they belong.

Hintz I., W. Ornithologischer Jahresbericht u. s. w. in der Umgegend von Schlosskämpen bei Cöslin in Pommern. Journ. für Orn. 1868, pp. 289–304, 389–404.

In continuation of the Reports before noticed (Zool. Rec. i. p. 43, ii. p. 64, iii. p. 51, and iv. p. 54); but the first portion only appeared within the year 1868.

Holmgren, Aug. Emil. Handbok i Zoologi für Landtbrukbare, Skogshushållare, Fiskeriidare och Jägere. II. Delen. Skandinaviens Foglar. Senare Häftet. I. Roffuglar och Duffoglar. Stockholm: 1866. pp. 435–609.

A continuation of the work noticed last year (Zool. Rec. iv. p. 54), giving an account of the Scandinavian *Accipitres* and *Columbæ*. The plates at the end are those used in Ström's 'Svenska Foglarna' (Stockholm: 1839). The woodcuts, for aught we know, may be new.

Holtz, Ludwig. Brutvögel der Insel Gottland. Journ. für Orn. 1868, pp. 100–131. [See "Oology."]

——. Die Insel Gottska-Sandö. *Tom. cit.* pp. 145–166. With a Map.

This island lies in the Baltic, north-east of that of Gothland. After a description of the island, and of its character, there follows a list of 47 species observed, of which 20 breed there, while the remainder are birds of passage.

HOMEYER, ALEXANDER VON. Ueber irreguläre Wanderungen und Haushalt einiger Vögel Europa's. Zoolog. Garten, 1867, pp. 121–127, 161–167, 199–204, 232–239, 269–273, 336–341, 401–405.

An attempt to throw light on a very difficult and most interesting subject, and to discover if there be any law which guides the apparently "irregular" movements of birds. These movements may be classed in three categories—those of real immigrants or species taking up their abode in localities to which they had been strangers, those of species which appear suddenly in great numbers, and those of species which appear singly. The species of which most is said are *Vultur fulvus* and *V. cinereus*, the northern *Strigidæ*, *Ampelis garrulus*, *Turdus pilaris* and *T. iliacus*, *Sylvia tithys*, *Fringilla serinus*, the species of *Loxia*, *Emberiza hortulana*, *Alauda cristata* and *A. alpestris*, *Nucifraga caryocatactes*, *Syrrhaptes paradoxus*, *Nycticorax griseus*, *Anas clangula*, and *Carbo cormoranus*. This series of articles has called forth several other communications to the same journal bearing on some of the points disputed by the author.

HOMEYER, EUGEN VON. Bemerkungen über einige europäische Drosseln. Journ. für Orn. 1868, pp. 170–179. [See *Turdidæ*.]

——. Beiträge zur Kenntniss der Vögel Ostsibiriens und des Amurlandes. *Tom. cit.* pp. 197–206, 248–259.

A digest, apparently very well executed, of the ornithological portions of the works of Von Middendorff (Sibirische Reise, Band ii. Th. 2, 1853), Von Schrenck (Reisen im Amurlande, Band i., 1860), and Radde (Reisen im Süden von Ost-Sibirien —Die Festlands Ornis, 1863), which, though almost universally known, are not very generally accessible. The two papers (all that we have as yet seen) only treat of 39 species; there is accordingly much more to follow.

HOMEYER, EUG. F. VON. Herrn Dr. Altum's Morgenexcursion und die Angaben Naumann's. *Tom. cit.* pp. 354–356.

A criticism on the paper already noticed (*suprà*, p. 38).

HOYNINGEN-HUENE, ALEXANDER Baron. Ornithologische Mittheilungen aus Estland. Journ. für Orn. 1868, pp. 235–238.

Notes only on the quarrelsomeness of *Rubecula sylvestris* and the breeding of *Linaria rubra* and *Pyrrhula vulgaris* in confinement.

KENNEDY, A. W. M. CLARK. The Birds of Berkshire and Buckinghamshire: a contribution to the Natural History of the two counties. Eton and London: 1868. Sm. 8vo, pp. 232.

The work of a boy of sixteen, of whom in due time we expect to hear more. (*Cf.* Ibis, 1868, pp. 337–339.)

Marchand, A. Catalogue des Oiseaux observés dans le département d'Eure-et-Loir. Rev. et Mag. de Zool. 1868, pp. 50–53.

In continuation of the series of papers before noticed (Zool. Rec. iv. p. 55). Two hundered and twenty-seven species are enumerated.

Middendorff, A. von. Sibirische Reise. Band iv. Uebersicht der Natur Nord- und Ost-Sibiriens. Th. 2. Erste Lieferung. Die Thierwelt Sibiriens. St. Petersburg: 1867. 4to, pp. 785–1094.

This publication treats of the following matters :—the Poverty of the fauna of Siberia and its similarity to and accordance with that of Europe (p. 785), the Siberian Vertebrates noticed by the author in his travels (p. 789), the extent of ideas as to species (p. 790), the variation of Siberian animals (p. 798), the unity of the geographical range of each species (p. 822), the foundations for a history of the distribution of Siberian animals, including Extinction (p. 829) and the preservation of animals requiring it (p. 875), the Hyperboreal Fauna (p. 910) and Birds especially (pp. 964–969), the Animals of Circumboreal Siberia (p. 976), Birds of the Circumboreal Tundras (pp. 987, 988) and Forests (pp. 1007–1009), Alpine animals compared with those of the High North (p. 1009), the birds especially and the difficulty of deciding to which category certain species belong (pp. 1015–1017), Polar and Boreal animals (p. 1017), Palæoboreal animals (p. 1026), Advance of the circuit of Distribution (p. 1052), with a Retrospect of the whole subject (p. 1066), concluded by some additions (p. 1079).

It is quite impossible for us here to indicate more particularly the very varied contents of this treatise, which seems to be admirably executed. Countless facts are brought together from all kinds of sources; but it may be observed that they are not always taken from the newest works on the subject.

Paijkull, C. W. A Summer in Iceland. Translated by M. R. Barnard. London: 1868. 8vo, pp. 364.

The original, published in Swedish, contains nothing ornithological except a moderate woodcut of *Alca impennis*. The translator adds a footnote (p. 8) containing an exceedingly doubtful assertion, and an "Appendix," including, among other things, a List of Birds found in Iceland (pp. 353, 354). This is transcribed from the list given by Dr. Robert in 1851 (Voyage en Islande et au Greenland. Zoologie et Médecine, pp. 161–166), which is founded upon Gliemann's (Geogr. Beschr. v. Islande. Altona: 1824, p. 150–170), and is utterly worthless; but the translator only is to blame. [*Cf.* Ibis, 1869, pp. 111, 112.]

Parrex, A. [See Dybowski, B.]

Quistorp, —. Ueber den Zug des Kranichs und das Erscheinen anderer Zugvögel in Neu-Vorpommern. Journ. für Orn. 1868, pp. 259–263.

The observations with regard to *Grus cinerea* are of some general value, but those respecting other birds of passage chiefly of local interest.

Sabanäeff, Leonida. Materialöi dlia Faunöi Jaroslafski guberni. Bull. Soc. Imp. Nat. de Moscou, xli. 1868, pp. 234–279, 487–524.

The object of these two papers, as their title indicates, is to give materials for a fauna of the Government of Jaroslav, one of the central provinces of Russia in Europe. The author begins by giving a sketch of the nature of the country, and indicates the various districts in which investigations have been made, as well as the species there observed—in the case of the birds, mentioning whether they are migratory or resident, and, if the former, whether they remain to breed. Each district has a chapter devoted to it—the Jamsk forests (p. 253), the islands of the Volga and the meadows inundated by its spring-floods (p. 262), the banks of the same river (p. 267), the Warelowo morass (p. 487), Lesnina (p. 503), and the Poluschkinoi forests and Zalorodnom gardens (p. 515). Very many of the observations seem to be of interest: *Surnia nyctea*, *Loxia leucoptera*, and *Caryocatactes guttatus* breed in the Government, and *Accentor montanellus* is found in the forests of Jamsk. It is to be regretted that these papers (which are not yet concluded) have not been published in a language which would render them more serviceable to naturalists in general *.

Smith, Alfred Charles. A Sketch of the Birds of Portugal. Ibis, 1868, pp. 428–460.

This paper contains much more than is to be gathered from its title, and is in fact a very well-concocted synopsis of Portuguese Ornithology. The author acknowledges his indebtedness to Prof. Barboza du Bocage for much assistance. After a graphic outline of the physical features of the country, a list of the species (193 in number) which occur there is given, wherein are distinguished those met with by the author alive and wild, those obtained by him in the flesh from the markets, and those resting on the authority of Prof. du Bocage. Besides these a considerable number of species are mentioned which are said with much probability to be found in the kingdom, but of which specimens are not at present forthcoming. An extremely dark hue seems almost universally to characterize the birds of the country. This peculiarity struck the author on his first arrival; and every day's observation confirmed its existence. As very little has hitherto

* We are much indebted to the kindness of Mr. H. E. Dresser for the foregoing abstract.

been known of the ornithology of Portugal, this is a most interesting paper.

Tristram, H. B. On the Ornithology of Palestine, Part VII., Ibis, 1868, pp. 204–215, pls. vi., vii.; Part VIII., *tom. cit.* pp. 321–335.

The conclusion of the valuable and interesting series of articles we have so often noticed (Zool. Rec. ii. pp. 67, 68, iii. p. 53, iv. p. 57). Part VII. treats of the remainder of the *Fringillidæ*, with plates representing *Petronia brachydactyla*, Bp. (Consp. Av. i. p. 513), and *Serinus aurifrons* (Zool. Rec. i. p. 85), the *Columbidæ*, and *Gallinæ*. Part VIII. contains the *Grallæ*, *Anseres*, and *Struthiones*. The ornis of the country is now fixed at 329 species, being 7 more than the number given by the author in his "Report" (Zool. Rec. i. p. 46). The discrepancy is fully explained (p. 332). Of these, 27 are peculiar, and 9 due to the author's discoveries: 36 species pertain to the Ethiopian Region; of these, 16 have not, in Palestine, been found out of the Dead Sea basin, the singularity of which is further shown by the fact that 11 species, belonging to as many different genera, are peculiar to it. Most of these genera are common to both the Ethiopian and Indian Regions; and it seems pretty nearly certain that this wonderful district was stocked by colonization after the close of the Eocene period and before the Glacial epoch. It now forms a "tropical outlier," of which there is no other terrestrial instance.

Walker, Theodore C. Remarks on the Birds of Ailsa Craig. Zoologist, Sec. Ser. pp. 1365–1373.

A very good account of this celebrated resort of sea-fowl, respecting which not much has hitherto been published.

ETHIOPIAN REGION.

Baker, Eden. The Birds of St. Helena. Zoologist, Sec. Ser. pp. 1472–1476.

The author makes no pretension to scientific knowledge; and the birds are only spoken of by their local names, excepting, indeed, *Charadrius pecuarius* on the strength probably of Mr. Layard's determination of that species (Zool. Rec. iv. p. 120).

Barboza du Bocage, J. V. Aves das possessões portuguezas d'Africa occidental que existem no Museu de Lisboa. Jornal de Sciencias da Acad. Real de Lisboa, 1868, no. v. pp. 38–50.

This, the third paper of the series noticed last year (Zool. Rec. iv. p. 58), contains two lists—one of the birds of Biballa and Maconjo, the other of those of Huilla, both in West Africa. The first contains a notice of 67 species, of which 2 (belonging to *Nectariniidæ* and *Sylviidæ*) are described as new; the second

includes 26 species, 3 (belonging to *Hirundinidæ*, *Turdidæ*, and *Scolopacidæ*) being announced as new. Some other rare or little-known birds are also noticed. [*Cf.* Ibis, 1869, pp. 117, 118.]

Blanford, W. T. Notes on the Ornithology of Abyssinia. Proc. As. Soc. Beng. 1868, pp. 85, 167, 168, 278–287.

The author was one of the naturalists attached to the late Abyssinian expedition. These notes give a good idea of the country through which he proceeded and such animals as presented themselves to his observation on the march to Magdala and back, and subsequently on a journey into the Bogos country.

Blyth, E. The Birds of South Africa. Journ. Travel and Nat. Hist. 1868, pp. 238–255.

A review of Mr. Layard's work, with the same title, written in a popular manner. Of the 792 species included by that gentleman, Mr. Blyth considers that 84 should be deducted.

Grandidier, Alfred. Notes sur les mammifères et oiseaux observés à Madagascar, de 1865 à 1867. Rev. et Mag. de Zool. 1868, pp. 3–7.

The conclusion of the series of papers noticed last year (Zool. Rec. iv. pp. 58, 59). Altogether, one hundred and fifty species are included, whereof 94 are indigenous to the island; and, except birds of great powers of flight, all are proper to its fauna.

——. Letter on the Birds of Madagascar. *Tom. cit.* p. 48.

Two species of *Campephagidæ* hitherto thought distinct are identical.

Gurney, J. H. An Eighth additional List of Birds from Natal. Ibis, 1868, pp. 40–52, pl. ii.

——. A Ninth additional List of Birds from Natal. *Tom. cit.* pp. 460–471, pl. x.

The last (seventh) of this series of papers was noticed in our second volume (p. 70). The first of the two now before us adds 24 species (2 of which, belonging to *Falconidæ* and *Ploceidæ*, are recognized as new) to the list, and the last 9—the whole number (allowing for a correction, *tom. cit.* pp. 157, 158) now known to be found within the limits of the colony being 315. To each paper further remarks on species formerly included are appended; and the field-notes of Mr. Ayres, who formed the collection, are included.

——. Notes on Mr. Layard's 'Birds of South Africa.' Ibis, 1868, pp. 135–164, 253–265, pls. iv., viii. Correction, p. 471.

The object of these notes is to suggest points for further investigation and, in a few instances, for amplification or correction, should another edition of the work cited, which we noticed

last year (Zool. Rec. iv. pp. 60, 61)*, be published. Mr. Gurney has worked into his notes many of the observations made by Vierthaler and Dr. A. E. Brehm (Naumannia, 1852, 1853, 1855–57, and Journ. für Orn. 1853–58) in North-eastern Africa, besides much else that is of interest, especially in the way of rectification of nomenclature. In the first portion of this paper one new species (belonging to *Hirundinidæ*) is described and figured; and in the second the southern form of Ostrich (see *Struthionidæ*), some peculiarities of which have long been known, is treated as distinct from the northern. The second plate represents *Glareola nordmanni*.

Heuglin, M. T. von. Synopsis der Vögel Nord-Ost-Afrikas, des Nilquellengebietes und der Küstenländer des rothen Meeres. Journ. für Orn. 1868, pp. 1–21, 73–100, 217–235, 305–328, Taf. i.

In continuation of the article noticed last year (Zool. Rec. iv. pp. 59, 60). The families comprehended in this series are *Coraciidæ, Oriolidæ, Ploceidæ, Fringillidæ, Emberizidæ, Alaudidæ*, and *Corvidæ*; and the more important features will be found noticed under those heads.

Layard, E. L. Letters on South-African Ornithology. Ibis, 1868, pp. 119–121, 242–248.

The first of these consists of remarks on migration and on the species of *Graculus* found at the Cape (see *Pelecanidæ*). The second is more important, and contains notes on some 29 species, supplementary to the account of them given by the author in his 'Birds of South Africa,' and having regard especially to their mode of breeding and eggs. Another new species (see *Laridæ*) is added to the fauna of the Cape.

Marno, E. Ergebnisse einer Reise in Nord-Ost-Afrika. Zoolog. Garten, 1868, pp. 212–216, 239–242.

These two papers form part of a series giving the results of Herr Casanova's expedition to obtain live animals in North-eastern Africa, and contain the ornithological portion. The first treats of the Ostrich, the second of the Birds of Prey, Hornbills, and Marabou.

Newton, Alfred. Additional Notes on Mr. Layard's 'Birds of South Africa.' Ibis, 1868, pp. 265–271.

Some 26 species found by Sir Andrew Smith north of lat. 26° S., and not hitherto recorded as occurring to the south of that parallel, though included by Mr. Layard in his work (Zool. Rec. iv. pp. 60, 61), are mentioned, as well as about 6 more which would seem to have equal right with the former to a

* In this notice we mentioned only one new species as having been described by Mr. Layard. We overlooked a second, belonging to the *Turdidæ* and recorded in the present volume.

place therein. Some bibliographical notes on Sir Andrew's various ornithological publications, copies of which are very rare, are also added in the passage above cited, and again subsequently (Ibis, 1868, pp. 502, 503). [*Cf.* Ibis, 1869, pp. 78, 79.]

Peters, W. Vorläufige Mittheilung über einige neue Vogelarten aus Mossambique. Journ. für Orn. 1868, pp. 131–134.

Thirteen species are described as new. They belong to the families *Alcedinidæ*, *Caprimulgidæ*, *Oriolidæ*, *Dicruridæ*, *Turdidæ*, *Sylviidæ*, *Ploceidæ*, and *Fringillidæ*.

Pollen, F. P. L. [See Schlegel, H., et Pollen, F. P. L.]

Schlegel, H., et Pollen, F. P. L. Recherches sur la Faune de Madagascar et de ses Dépendances, d'après les découvertes de MM. F. P. L. Pollen et D. C. van Dam. Mammifères et Oiseaux. Livraisons iii., iv. Leyde: 1867–68. Roy. 8vo, pls.

The ornithological portion of this beautifully illustrated work, before noticed by us (Zool. Rec. iv. p. 61), is now completed. Besides the account of the birds collected by the naturalists whose labours it is especially intended to record, it contains a commentary on Dr. Hartlaub's 'Ornithologischer Beitrag zur Fauna Madagascar's' (Bremen: 1861), and several lists—one showing roughly the geographical distribution of birds in Madagascar and the neighbouring islands, and another the number of specimens from that subregion possessed by the Leyden Museum. The commentary on Dr. Hartlaub's work is not, we think, as carefully executed as it might have been had the authors not been content with thinking that their museum (undoubtedly very rich in this respect) contained almost everything the subregion produced. [*Cf.* Ibis, 1868, pp. 476, 477; 1869, pp. 112, 113.]

Smith, A. C. The Nile and its Banks, &c. London: 1868. 2 vols. sm. 8vo, pp. 282 and 295.

To an agreeably-written narrative of a voyage on this river, the author appends (ii. pp. 197–283) a chapter on the ornithology of Egypt, besides giving a list of the species (*tom. cit.* pp. xi–xiv) he himself saw in that country, 101 in number. [*Cf.* Ibis, 1869, pp. 110, 111.]

Sperling, Rowland M. Ornithological Notes from the Ethiopian Region. Ibis, 1868, pp. 282–295.

These notes were made on a cruise from Cape Town to Zanzibar and back; but the author was hindered from visiting several of the most interesting localities by the way. Forty-three species were noticed. A description of the breeding-place of *Sterna fuliginosa* at Ascension is also included.

Vinson, A. De l'Acclimatation à l'île de la Réunion. Oiseaux. Bull. de la Soc. Impér. zool. d'Acclimatation, 1868, pp. 625–632.

A somewhat discursive paper, in which more subjects than those strictly included by the title are mentioned. Thus the author gives a list of the 32 species of birds found in the island, of which 14 are said to have been introduced, and the remainder to be indigenous; but the nomenclature employed does not seem to be very trustworthy.

INDIAN REGION.

Beavan, R. C. Notes on various Indian Birds. Ibis, 1868, pp. 73–85, 165–181, 370–406. Error corrected, *tom. cit.* pp. 355, 356.

These three articles conclude the series before noticed (Zool. Rec. ii. p. 72, and iv. p. 62). Particulars, often accompanied by very precise measurements of specimens, are given concerning some 215, one of which (belonging to *Laridæ*) is described as new, while another (belonging to the same family) may possibly be so as well. Some field-notes of the late Dr. David Scott are incorporated with the author's, and a few criticisms, chiefly on points of nomenclature, added by Lord Walden. [See also Blyth, E.]

——. Sundry Notes on Indian Raptores. Proc. Zool. Soc. 1868, pp. 390–402, pl. xxxiv. [See "Accipitres."]

Blyth, E. Letter on the Birds of the Andaman Islands. Ibis, 1868, pp. 131–133.

Several of the species included in Mr. Beavan's paper (Zool. Rec. iv. p. 62) are differently referred, and the validity of some described as new is disputed.

——. Letter on Indian Birds. *Tom. cit.* pp. 354, 355.

Remarks on the second of Mr. Beavan's articles (*ut suprà*).

Gould, John. The Birds of Asia. Part xx. London: 1868. Imp. folio.

All but one of the species figured are Indian. A new generic name is proposed (see *Hirundinidæ*). [*Cf.* Ibis, 1868, p. 472.]

Hume, Allan. Stray Notes on Ornithology in India. Ibis, 1868, pp. 28–40.

Treats of the habits of *Grus leucogeranus*.

——. Letter on Indian Ornithology. *Tom. cit.* pp. 233–241.

Gives particulars of various species of *Saxicola*, records the occurrence in India for the third time of *Pelecanus crispus*, and treats of various other birds.

KING, GEORGE. On the Birds of the Goona District. Journ. As. Soc. Bengal (1868), xxxvii. pp. 208–218.

The district lies in Central India, about 200 miles south of Agra, and at an elevation of 1400 feet and upwards. A nominal list of 178 species observed is given, to which are prefixed a few notes on some of them.

MAINGAY, —. Notes on rare and little-known Malayan Mammals and Birds. Proc. As. Soc. Bengal, 1868, pp. 194–198.

These are very brief, but a supposed new species of *Bucerotidæ* is described.

PELZELN, AUGUST VON. Ueber die von Dr. Stoliczka im Himalaya und in Tibet gesammelten Vogelarten. Journ. für Orn. 1868, pp. 21–37; Ibis, 1868, pp. 302–321 (translated, with notes, by Lord WALDEN).

After a few words of introduction, an alphabetical list of the localities, with their geographical position and elevation above the sea (from 1000 to 17,000 feet), at which the species were obtained is given. Then follows a list of these species, 190 in number, with their localities, and a few remarks. The paper is a valuable one, from the well-known accuracy of its author, who makes a few identifications of species not hitherto suspected; and the English version is more valuable still from the translator's notes.

SALVADORI, TOMMASO. Nuove specie di Uccelli di Borneo. Atti della R. Accad. Sc. di Torino, 1868, pp. 524–533.

Eight are described as new (see *Picidæ, Pittidæ, Timaliidæ. Campephagidæ, Muscicapidæ,* and *Sylviidæ*), but no precise localities are given. [*Cf.* Ibis, 1868, p. 482.]

STOLICZKA, F. Ornithological Observations in the Sutlej valley, N.W. Himalaya. Journ. As. Soc. Bengal (1868), xxxvii. pp. 1–70.

The author's collections in the Himalaya and Tibet have been examined by Herr von Pelzeln (*vide suprà*). In the present paper, after some introductory remarks and an elaborate description of the natural features of the Sutlej valley, Dr. Stoliczka enumerates the species which have fallen under his observation in that district between May and October, 280 in number, adding notes which give a great variety of valuable information respecting many of them. Three species (belonging to *Ploceidæ, Fringillidæ,* and *Alaudidæ*) are described as new, and two others (*Cinclidæ* and *Sylviidæ*) may probably be so as well; but to these latter the author refrains from applying names. Six species are in all added to, and four probably subtracted from, the Indian fauna by him. [*Cf.* Ibis, 1869, pp. 208–215.]

Swinhoe, Robert. Ornithological Notes from Amoy. Ibis, 1868, pp. 52–65.

In continuation of the papers noticed last year (Zool. Rec. iv. p. 64), and of the same comprehensive character. Five species are described as new, belonging to *Timaliidæ* (*Pterorhinus*, g. n.), *Sylviidæ*, *Paridæ* (2), and *Rallidæ*.

——. Letter on the Ornithology of Hainan. *Tom. cit.* pp. 353, 354.

A few very short notes on the birds of this (ornithologically speaking) almost unknown island, the avifauna of which seems to possess several peculiar characters. *Pavo nigripennis*, Sclat. (P. Z. S. 1860, pp. 221, 222), is supposed to be a native of Annam.

Tytler, Robert C. Notes on the Birds observed during a march from Simla to Mussoorie. Ibis, 1868, pp. 190–203.

After a short description, given in the form of a journal, of the country traversed (which varied in elevation from 4500 to 10,300 feet), 126 species * are enumerated, and short notes given of the localities where they were found.

——. Observations ornithologiques. Rev. et Mag. de Zool. 1868, pp. 193–199.

These are contained in a letter addressed to, and translated by, M. Jules Verreaux, but bearing date 7 May, 1863. They have reference to the Andaman Islands, of the avifauna of which a very complete list by Mr. Beavan in the meantime appeared (Zool. Rec. iv. p. 62), but this is not noticed by the translator. As Mr. Beavan was largely aided by Col. Tytler, it follows that this gentleman's later observations are those which should be trusted; and, indeed, many of his former determinations subsequently proved to be erroneous. Consequently the present paper is of very little value (*cf.* R. C. Beavan, Ibis, 1869, pp. 220, 221).

Verreaux, Jules. Notes ornithologiques. Ann. des Sciences Naturelles, Zoologie, 5e sér. x. p. 67.

Four species from China and Cochin China, belonging to *Megalæmidæ*, *Muscicapidæ*, *Paridæ*, and *Emberizidæ* are described as new.

Walden [Arthur Hay] Viscount. [See Pelzeln, August von.]

AUSTRALIAN REGION.

Allport, Morton. On the Local Distribution of some Tasmanian Animals. Pap. & Proc. Roy. Soc. Tasmania, May 1867, pp. 9–12.

* The original description of two of these, belonging to *Dicruridæ* and *Emberizidæ*, we have been unable to find.

While certain species of birds have entirely vanished as cultivation and human population extends, a few others have appeared and even established themselves in the settled districts.

Allport, Morton. Remarks on Mr. Krefft's 'Notes on the Fauna of Tasmania.' *Op cit.* July 1868, pp. 33–36.

With Mr. Krefft's 'Notes' we are not acquainted. Mr. Allport points out a few inaccuracies in them, and adds some eight species * to the ornis of the island.

Diggles, Sylvester. The Ornithology of Australia. Queensland. Imp. 4to. Parts XVI–XX., pls.

Five parts of this work, containing a large number of figures (which will be found mentioned under the families they represent), have reached us since we last noticed it (Zool. Record, iv. p. 64).

Finsch, O. (See Haast, J., and Hartlaub, G., and Finsch, O.)

Gould, John. On Two New Australian Birds. Proc. Zool. Soc. 1868, pp. 74–76. [See *Cuculidæ* and *Pittidæ*.]

Haast, Julius. Beobachtungen über einige Vögel Neu-Seelands. Journ. für Orn. 1868, pp. 238–245.

This is a compilation by Dr. Finsch from a letter of Dr. Haast's, and from the latter's 'Report,' which we mentioned last year (Zool. Record, iv. p. 66), and contains a few corrections of the former's translation of Mr. Buller's 'Essay' (*tom. cit.* p. 64). Twenty-one species are noticed, besides the skeletons of seven species of *Dinornis* in the museum at Christchurch, New Zealand.

Hartlaub, G., and Finsch, O. On a collection of Birds from the Pelew Islands. Proc. Zool. Soc. 1868, pp. 4–9, pls. ii., iii.

A former collection from these islands, among others, was noticed last year (Zool. Record, iv. p. 66). The present contains thirty-five species, of which six, belonging to the families *Meliphagidæ, Laniidæ, Muscicapidæ* (2), *Sylviidæ*, and *Columbidæ*, are new. Two new genera are made, and their types figured. A variety of useful particulars are given with respect to other birds of the islands.

——, ——. Additional Notes on the Ornithology of the Pelew Islands. *Tom. cit.* pp. 116–118.

Eighteen species (of which one †, belonging to *Meliphagidæ*, is new) are added to the ornis of the group, which now numbers forty-one species. Of these, eight are peculiar to the islands.

* Some of them had previously been mentioned by the author, at a meeting of the Society in October 1865 (*op. cit.* 1865, p. 106).

† The authors say that "two" are undescribed, but we are unable to find the second.

Ramsay, E. P. Letter on Australian Ornithology. Ibis, 1868, pp. 231–233.

On the breeding-habits, nest, eggs, and young of *Donacola castaneothorax*.

——. Notes on Birds breeding in the neighbourhood of Sydney. *Tom cit.* pp. 271–280. [See "Oology."]

——. On certain New and Rare species of Birds found at Rockingham Bay, Queensland. Proc. Zool. Soc. 1868, pp. 381–388.

Forty species are enumerated, of which five (belonging to *Falconidæ*, *Caprimulgidæ*, *Menuridæ*, and *Meliphagidæ*) are supposed to be new, but the two first are left unnamed; a new genus (of *Muscicapidæ*) is also recommended.

Wallace, Alfred R. On the Raptorial Birds of the Malay Archipelago. Ibis, 1868, pp. 1–27, pl. i.

——. Corrections of, and additions to, the Catalogue of the Raptorial Birds of the Malay Archipelago. *Tom. cit.* pp. 215, 216.

The first of these papers is of a piece with the author's former monographs of the *Psittaci* and *Columbæ* of the same part of the world (Zool. Rec. i. pp. 53–55, ii. pp. 76–78); but the subject, or some portion of it, having been lately handled by Prof. Schlegel and Dr. Kaup (Zool. Record, iii. p. 58, iv. pp. 81, 82), Mr. Wallace's treatment of it is necessarily more critical. Furthermore, his scope is larger than that of either of the zoologists named. Eighty-seven species are enumerated, many of which would no doubt by some authors be only regarded as local forms. The *Vulturidæ* are entirely absent. The average number of species of *Falconidæ* found in an island is ten, of *Strigidæ* three; Java, however, possesses seventeen of the former and eight of the latter. Taking the groups of islands, the number diminishes pretty regularly from west to east; yet, owing to the richness of the Celebes as compared with the Philippine group (as at present known), that part of the archipelago which, according to our arrangement, falls to the Indian Region furnishes fewer species than the part which is more strictly Australian, the proportion being forty-four to fifty-eight. Celebes presents, as usual, some striking peculiarities, many of its species, though of different genera, having a similar style of coloration. Though this paper is elaborated with its author's customary care, including a synonymatic list, field-notes, and geographical table, a supplement was shortly after required, wherein the author, besides making a few minor corrections, adds three other species to his catalogue, and throws some doubt on one (*Spizaetus nanus*) which he had just before described and figured as new. [See "Accipitres."]

NEARCTIC REGION.

Brown, Robert. Synopsis of the Birds of Vancouver Island. Ibis, 1868, pp. 414–428.

After a concise notice of the literature of the subject, 153 species are enumerated as said to occur on the island, five of which are perhaps doubtful, and fourteen more did not come within the author's observation. Some sixty-two more ought to be looked for. The notes on the various species are not numerous.

Coues, Elliott. List of Birds collected in South Arizona by Dr. E. Palmer. Proc. Acad. Nat. Sc. Philadelphia, January 1868, pp. 4*.

The author adds four species to those named in his former paper (Zool. Record, iii. p. 61); and the list is also valuable in clearly indicating some differences between the avifauna of the southern desert and that of the northern mountain portions of the district. [*Cf.* Ibis, 1868, p. 485.]

——. Synopsis of the Birds of South Carolina. Proc. Boston Soc. Nat. Hist. xii. pp. 104–127.

After a few remarks on the characters of the ornis of this State, the author gives a list of the 294 species which compose it, appending brief notes containing much information as to their distribution, and particularly with regard to the season of their appearance. Those which are characteristic of the South-Atlantic and Gulf States, 14 in number, have an asterisk prefixed to their names. [*Cf.* Ibis, 1869, pp. 118–120.]

——. Catalogue of the Birds of North America contained in the Museum of the Essex Institute; with which is incorporated a List of the Birds of New England. With brief Critical and Field Notes. Proc. Essex Instit. v. pp. 249–314. Separately printed as 'A List of the Birds of New England.' Salem, Mass.: 1868. 8vo, pp. 71.

This capital paper, the author remarks, "is perhaps more needed since than before the appearance of Mr. Samuels's work," which we noticed last year (Zool. Rec. iv. pp. 67, 68). Dr. Coues gives a list of authors who have previously treated the subject; and his critical remarks throughout are of the best; those on the peculiarities of the New-England avifauna (pp. 2, 3) deserve especial mention, as being of general interest. About 335 species are enumerated as having certainly occurred; many more rest on doubtful evidence. [*Cf.* Ibis, 1869, pp. 228, 229.]

Dugès, Alfred. Aperçu général sur la Fauna de Guanajuato (Mexique). Bull. de la Soc. Impér. zool. d'Acclimatation, 1868, pp. 546–578.

Of no very great value to the zoologist; as to the ornithology

* We are unable to give the precise pagination for the reason before mentioned (p. 30, note).

of the country, first the domestic species are treated (pp. 558–560), then the useful or agreeable wild ones (pp. 562–567), and lastly those which are noxious (pp. 573, 574).

Elliot, D. G. The Birds of North America. Parts IX.–XII. New York: 1868. Imp. fol.

Four parts of this great work have appeared within the past year. The species figured are named under their genera in the special portion of this Record. [*Cf.* Ibis, 1868, pp. 345, 346.]

Sumichrast, F. On the Geographical Distribution of the Native Birds of the Department of Vera Cruz. Proc. Boston Soc. Nat. Hist. xii. (1868) pp. 222–225.

An abstract of a paper communicated by Dr. Brewer, and published at length in the present year in the 'Memoirs' of the Society (i. pp. 542 563). Nominal lists are given of the birds found in the three zones or "regions" into which the author divides the country; and in the paper at full length, notes of much interest are appended respecting many of them.

NEOTROPICAL REGION.

Burmeister, H. Contributions to the Ornithology of the Argentine Republic and adjacent Lands. Part I. Proc. Zool. Soc. 1868, pp. 633–636.

Since the publication of the author's "Systematisches Verzeichniss der in den La Plata-Staaten beobachteten Vögelarten" (Journ. für Orn. 1860, pp. 241–268) and his 'Reise durch die La-Plata-Staaten' (1861), he has lived five years in Buenos Ayres, and in studying the ornithology of the district has observed some new species, three of which (belonging to *Falconidæ*, *Dendrocolaptidæ* and *Cotingidæ*) are now described, and notes on eleven others are given.

Cope, Edward D. The Birds of Palestine and Panama compared. American Naturalist, 1868, pp. 351–359.

Founded on the researches of Messrs. Tristram, Sclater, and Salvin. The Palestine *ornis* excels that of Panama in superiority of development (according to what appears to be the author's views of it), the *Oscines* of the former finding their parallels in the *Clamatores* of the latter.

Cunningham, Robert O. Letters on South-American Ornithology. Ibis, 1868, pp. 122–129, 486–495.

The author is naturalist on board H.M.S. 'Nassau,' employed in surveying the Strait of Magellan, and in his first letter gives a very general account of the birds met with on his voyage thither and on the coast of Patagonia. [See Sclater, P. L., and Salvin, O.] In his second letter he describes briefly the localities visited, mentioning their chief ornithological features, in the season 1867–68.

Euler, Carl. Beiträge zur Naturgeschichte der Vögel Brasiliens. Journ. für Orn. 1868, pp. 182–194.

In continuation of the very interesting series of papers noticed last year (Zool. Rec. iv. p. 68), and of the same character. An account of the mode of breeding of thirteen more species (one belonging to *Tyrannidæ* being new) is given, as well as further particulars of one respecting which mention has already been made.

Giebel, C. Einige neue und wenig bekannte argentinische Vögel. Zeitschr. für die gesammten Naturwissenschaften, 1868, pp. 11–17.

Notes on four species, two of which, belonging to *Dendrocolaptidæ* and *Troglodytidæ*, appear to be described as new.

Lawrence, G. N. A Catalogue of the Birds of Costa Rica. Ann. Lyc. Nat. Hist. New York, 1868, pp. 86–141*.

This catalogue is based upon the collections received by the Smithsonian Institution, supplemented by information received from other sources, and includes notices of 474 species of Land-birds, of which twelve (belonging to *Trogonidæ*, *Formicariidæ*, *Dendrocolaptidæ*, *Tyrannidæ*, *Mniotiltidæ*, *Tanagridæ*, *Columbidæ*, and *Tinamidæ*) are described as new, while a thirteenth (*Trochilidæ*) may be so. In the introductory remarks the author gives a summary of previous writings on Costa-Rican ornithology, and three lists, the first two of species noted from Chiriqui and Veraguas respectively which may be found in Costa Rica, and the third of northern species obtained in Panama but not yet observed in the country of which the paper treats. The remainder of the paper is devoted to the catalogue, which, in the great majority of cases, gives only the name of the species and of the locality where it has been obtained. [*Cf.* O. Salvin, Ibis, 1869, pp. 310–319.]

Pelzeln, August von. Zur Ornithologie Brasiliens. Resultate von Johann Natterers Reisen in den Jahren 1817 bis 1835. I. Abtheilung. Wien: 1868. 8vo, pp. 68, xxxi. With Map.

The object of this work is to give a connected account of the results of Natterer's travels. It consists first of a list of the species collected by him, showing the number of specimens of each and the dates when they were procured; and this first part of the book includes one hundred species, being about a twelfth of his collections. Then follows a description by the author of twenty new or little-known species. Of the former there are

* The concluding part of this paper (which, as internal evidence shows, does not belong to the literature of 1868), beginning in the middle of page 141 with the order *Grallæ*, has just reached us. We only mention it now to obviate any confusion that might arise when the whole is bound up and there is nothing left to show that one part was printed nearly twelve months before the other.

twelve, belonging to *Cypselidæ*, *Trochilidæ* (not procured by Natterer), *Dendrocolaptidæ* (7), and *Troglodytidæ* (3), one of the latter being the type of a new genus. An Itinerary of Natterer's ten journeys, with a list showing the geographical distribution of each species throughout the six "Faunas" into which the author divides the Brazilian Empire, conclude the publication.

Natterer's labours certainly deserved some such recognition as this; and Herr von Pelzeln, by completing the work, will confer a great benefit on ornithologists. The map does not seem to have been drawn with special reference to Natterer's wanderings, and some of the most important places at which he collected are omitted from it. [*Cf.* Zeitschr. ges. Naturwissensch. 1867, p. 537; Ibis, 1868, pp. 226, 227, 1869, pp. 113–117; Zool. Gart. 1868, p. 40.]

Philippi, R. A. Letter relating to certain Birds of Chili. Proc. Zool. Soc. 1868, pp. 531, 532.

Contains a few corrections of his previous works on the subject (*cf.* P. Z. S. 1867, pp. 319, 320, notes), the principal referring to two species of *Anatidæ*.

Salvadori, Tommaso. Intorno ad alcuni Uccelli di Costa Rica. Atti della R. Accad. Sc. di Torino, 1868, pp. 170–185.

Twenty-three species are enumerated, but none are new. A new genus of *Momotidæ*, however, is founded, and *Pheucticus tibialis* (Zool. Rec. iv. p. 107) is figured. [*Cf.* Ibis, 1869, pp. 222, 223.]

Salvin, O. [See Sclater, P. L., & Salvin, O.]

Sclater, P. L., and Salvin, O. List of Birds collected in the Straits of Magellan by Dr. Cunningham, with Remarks on the Patagonian Avifauna. Ibis, 1868, pp. 183–189.

Forty-four species, of which examples were collected in the district by Dr. Cunningham (*vide suprà*, p. 54), are enumerated, with a short preliminary sketch of the labours of former investigators in the same quarter. A complete list of the Patagonian *Passeres* is also given, showing which are common to Chili and which to La Plata, the whole proving that Patagonia belongs to the same zoological province as Chili. None of the species enumerated are new; but one specimen of a female *Dafila* is left undetermined.

——, ——. Descriptions of New Species of Birds of the Families *Dendrocolaptidæ* [2], *Strigidæ* [2], and *Columbidæ* [2]. Proc. Zool. Soc. 1868, pp. 53–60.

——, ——. List of Birds collected at Conchitas, Argentine Republic, by Mr. William H. Hudson. *Tom. cit.* pp. 137–146.

Ninety-six species are represented in the collection, of which fourteen are not included by Prof. Burmeister (Reise durch die La Plata-Staaten, Bd. ii.). The locality is about twelve miles from Buenos Ayres. None of the species are new, but several rare. Several rectifications of nomenclature are made.

Sclater, P. L., and Salvin, O. On Venezuelan Birds collected by Mr. A. Goering. Part I. *Tom. cit.* pp. 165–173, pl. xiii. Part II. *Tom. cit.* pp. 626–632.

The first of these papers contains a nominal list of 126 species arranged in a tabular form to show the localities at which they were obtained by the collector, to which are added notes on 13 of them. Three, belonging to *Mniotiltidæ* and *Tyrannidæ* (2), are new, and two are figured, one of the last being the type of a new genus.

The second paper is on the same plan. The nominal list includes 99 species; and notes are appended to 13, of which 2, belonging to *Cotingidæ* and *Tyrannidæ*, are new.

——, ——. On Peruvian Birds collected by Mr. H. Whitely. Part II. *Tom. cit.* pp. 173–178. Part III. *Tom. cit.* pp. 568–570.

These two articles are in continuation of that noticed last year (Zool. Rec. iv. p. 71). The first contains a list of a collection made in the Tambo valley, including 28 species, none of which are new: but valuable critical notes are appended to it, and woodcuts of the head of 2 species, belonging to *Tanagridæ* (?) and *Rallidæ*, are introduced. Various emendations of the species included in Dr. Salvadori's paper (Zool. Rec. ii. p. 59) are added (p. 175, note).

The second article contains a list of a small collection of 11 species (none of which are new) made near Arequipa. To it is subjoined a nominal list of the 83 species obtained by Mr. H. Whitely in Western Peru; and the more salient features of the ornis of that district compared with that of the corresponding eastern slope of the Andes are briefly given. The former is without many of the groups characteristic of the latter, and the majority of the forms it possesses are common to the Patagonian Province of the Neotropical Region.

——, ——. Descriptions of New or little-known American Birds of the Families *Fringillidæ*, *Oxyrhamphidæ* [see *Dendrocolaptidæ*], *Bucconidæ*, and *Strigidæ*. *Tom. cit.* pp. 322–329, pl. xxix.

——, ——. Descriptions of Four New Species of Birds from Veragua. *Tom. cit.* pp. 388–390.

[See *Trochilidæ*, *Tyrannidæ*, and *Tanagridæ* (2).]

——, ——. Synopsis of the American *Rallidæ*. *Tom. cit.* pp. 442–470, pl. xxxv.

ANATOMY AND PHYSIOLOGY.

Coues, Elliot. Bird's-eye Views. American Naturalist, 1868, pp. 505–513.

A popular account of the accessory structures of a bird's eye.

Darwin, Charles. The Variation of Animals and Plants under Domestication. [See also "General Subject."]

Various interesting and remarkable osteological details with respect to Pigeons, Fowls, and Ducks are herein contained; and some are mentioned below, under *Columbidæ*, *Phasianidæ*, and *Anatidæ*.

Davy, John. On the Temperature of the Common Fowl (*Gallus domesticus*). Proc. Roy. Soc. Edinb. vi. p. 291.

A posthumously-published communication, of which the following are given as the chief results:—

(1) The average temperature is 107°·81.
(2) Before maturity it is 108°·5.
(3) That of the cock is 108°·39, that of the hen 107°·3.
(4) That of the fully mature cock is 108°·77.
(5) That of the laying hen is 107°·4.
(6) That of the incubating hen is 107°.
(7) During moulting it is 108°·44.

Haughton, Samuel. On the Muscular Mechanism of the Leg of the Ostrich. Proc. Roy. Irish Acad. ix. pp. 50–61.

A reprint, with figures, of the paper before noticed (Zool. Rec. ii. pp. 85, 138).

——. Muscular Anatomy of the Emu (*Dromæus novæ-hollandiæ*). *Tom. cit.* pp. 487–497.

——. Muscular Anatomy of the Rhea (*Struthio rhea*). *Tom. cit.* pp. 497–504.

——. On the Comparative Myology of certain Birds. *Tom. cit.* pp. 524–526.

The first two of these three papers contain notes in much detail on their respective subjects, illustrated by figures. The birds treated of in the third paper are *Falco peregrinus*, *Polyborus brasiliensis*, *Grus virgo*, and *Anser canadensis*.

Huxley, T. H. [See also "General Subject."]

——. Remarks upon *Archæopteryx lithographica*. Proc. Roy. Soc. 30 Jan. 1868, vol. xvi. pp. 243–248. Reprinted, Ann. & Mag. Nat. Hist. 4th ser. i. pp. 220–224.

The author states that there are several important errors in Prof. Owen's description (Phil. Trans. 1863) of this celebrated fossil—among them, that the specimen presents its dorsal instead of its ventral surface to the eye, and that many of the bones which have been attributed to the right side of the animal are those of the left, and *vice versâ*. He concludes by

saying that it is in his opinion quite possible that *Archæopteryx* may have had teeth in its jaws, though this would not render it the less a bird. In the tarsal region *Compsognathus* comes nearest to it; in the pelvic, *Megalosaurus* and *Iguanodon*; and Prof. Huxley is disposed to think that in many respects *Archæopteryx* was more remote from the boundary-line between Birds and Reptiles than some of the living *Ratitæ* are.

Klein, — von. Vergleichende Beschreibung des Schädels der Wirbelthiere. Versuch einer auf anatomische Gründe sich stützenden, gleichartig durchgeführten Benennung der Schädelknochen. Württemb. naturwissensch. Jahreshefte, 1868, pp. 71–171.

The class *Aves* comes in for a fair share of treatment in this paper.

Lee, R. J. Observations on the Ciliary Muscle in Fish, Birds, and Quadrupeds. Journ. Anat. & Physiol. Nov. 1868, 14–23.

Contains descriptions with illustrations of this part in *Gallus*, *Strix*, *Falco*, and *Phasianus*.

Macalister, Alexander. On the Anatomy of the Ostrich (*Struthio camelus*). Proc. Roy. Irish Acad. ix. pp. 1–24.

Gives the anatomy of the whole animal of both sexes, Dr. Haughton having before treated of a portion (Zool. Rec. ii. pp. 85, 138) in considerable detail.

Magnus, Hugo. Physiologisch-anatomische Untersuchungen über das Brustbein der Vögel. Arch. für Anat. Physiol. und wissensch. Med. 1868, pp. 682–710, Taf. xvi., xvii.

After a brief reference to the authors who have previously written on the subject (De Blainville, L'Herminier, Geoffroy St.-Hilaire, Gervais, and Blanchard), and remarking on the importance of the sternum as a taxonomic character, the author states that five principal forms of this bone are found,—the First in the *Cursores* [=*Struthiones*], where it has no keel, and is of a rounded shield-shape, though he remarks on the absence of a keel in the very young of those birds which subsequently have it well developed; the Second form exists in the diurnal *Accipitres*, the *Cypselidæ*, and *Caprimulgidæ*, where it is very concave, long and broad, with a remarkably pronounced keel, though the angle this forms with the body of the sternum is obtuse; the Third, as in the *Oscines*, with *Upupa*, *Alcedo*, and so forth, the *Gallinæ* and most of the *Scansores*, has it less concave, the keel well developed and a notch (or occasionally two notches) on either side; the Fourth form, possessed by the Swimming-birds, *Mergus*, *Sula*, *Podiceps*, and others, is less concave, the point of the keel projects forward, and the notches sometimes become fenestrations; the Fifth group includes the *Grallatores*,

where the sternum is long and narrow, more concave, and never without notches, and the keel much pronounced. The remainder of the paper is occupied by a notice of various modifications which different groups exhibit. [*Cf.* Journ. Anat. & Physiol. May 1869, p. 458.]

Milne-Edwards, A. Recherches Anatomiques et Paléontologiques pour servir à l'histoire des Oiseaux Fossiles de la France. [See "General Subject."]

Murie, J. Observations concerning the presence and function of the Gular Pouch in *Otis kori* and *Otis australis*. Proc. Zool. Soc. 1868, pp. 471–477, pl. xxxvi.

A male *O. kori* possessed a pouch, of which a woodcut is given, in position and structure identical with that of *O. tarda* (Zool. Rec. ii. pp. 83, 84, and 133, iii. p. 110), but very much smaller. The same organ is possessed by a male *O. australis* living in the Zoological Gardens, and developed to an extraordinary degree, as the plate* shows. Its manner of inflating this structure, and other habits, are described. A second male example, living with it, does not exhibit any indications of this peculiarity †; nor did examples of *O. tetrax* or *O. houbara*. Some excellent remarks on this mysterious subject are added.

Newton, Alfred. [See "General Subject."]

Parker, W. K. A Monograph on the Structure and Development of the Shoulder-girdle and Sternum in the *Vertebrata*. London: 1868. Fol. pp. 237, pls. xxx. (Ray Society.)

Though we can scarcely say that the subject-matter of this admirable work is treated zoologically, its great merit forbids us to exclude it from notice. The ornithological portion (pp. 142–194) occupies a fair share of the work. The systematist must naturally regret that Mr. Parker's investigations do not yet produce more practical results; but it is necessary here to be patient, for it cannot fail that studies so conscientious will not eventually bear fruit. [*Cf.* Journ. Anat. & Physiol. May 1868, pp. 374–381; Ibis, 1868, pp. 474, 475.]

Ruedinger, —. Die Muskeln der vorderen Extremitäten der Reptilien und Vögel mit besonderer Rücksicht auf die analogen und homologen Muskeln bei den Säugethieren und dem Menschen. Natuurk. Verhandel. van de Hollandsche Maatshappij der Wetenschappen te Haarlem. xxv. Deel, 187 pp. xv. Taf.

This is one of the prize essays of the Harlem Society. The

* Notwithstanding that the figure is a gross caricature, we can state that the peculiarity which it is chiefly intended to represent is not exaggerated.

† The mouth and entire neck of the specimen described by Mr. Ramsay (Zool. Rec. iv. p. 120) has been sent to us by him. There is no trace of a gular pouch in it.

birds selected to illustrate the subject are *Vultur cinereus, Casuarius galeatus, Struthio camelus,* and *Aptenodytes demersus*; and of these species the myology of the fore limbs is described in great detail.

Van der Hoeven, J. Annotationes de *Dromade ardeola,* Payk. Dresdæ: 1867. 4to, pp. 16, pl. Separately printed from Nov. Act. Ac. L.-C. Nat. Cur. xxxiii. Translated, Archives Néerlandaises, 1868, pp. 281–295.

A very full description of the osteology of this form, which the author places next to *Hæmatopus* (*cf.* Ibis, 1867, p. 351).

Voit, —. Beobachtungen nach Abtragung der Hemisphären des Grosshirns bei Tauben. Sitzungsb. Ak. Wissensch. München, 1868, ii. pp. 105–108.

Purely physiological.

Geopsittacus occidentalis, some parts of its osteology very minutely described. J. Murie, Proc. Zool. Soc. 1868, pp. 162–165.

PTEROLOGY.

Cornalia, Emilio. Sopra due casi di Albinismo negli Uccelli. Atti della Soc. Ital. di Sc. Nat. x. pp. 449–458.

The two cases are those of *Passer montanus* and *Chelidon urbica*; and in reference to them the author enters at some length on the generalities of the subject of albinism.

Coues, Elliott. Instances of Albinism among our Birds. American Naturalist, 1868, pp. 161, 162.

About a dozen examples, chiefly of North-American species, in which this peculiarity has been observed, are described.

NEOSSOLOGY.

Bettoni, Eugenio: Storia Naturale degli Uccelli che nidificano in Lombardia, &c. [See "Palæarctic Region."]

The young of *Monticola saxatilis, Upupa epops, Ruticilla phœnicura, Sturnus vulgaris, Phyllopneuste bonellii, Circus æruginosus, Hirundo rustica, Philomela luscinia, Curruca orphea, Strix flammea, Turtur auritus, Tinnunculus alaudarius, Carduelis elegans, Motacilla alba, Enneoctonus rufus, Ardea purpurea, Hypolais salicaria, Buteo cinereus, Cypselus apus, Sylvia cinerea, Ruticilla tithys, Dendronanthus arboreus, Cyanistes cæruleus, Petrocossyphus cyaneus, Prunella modularis, Cotyle riparia, Troglodytes europæus, Jynx torquilla, Corvus cornix,* and *Otus vulgaris* are figured.

Marchand, Alb. Poussins des oiseaux d'Europe couverts de duvet à la sortie de l'œuf. Rev. et Mag. de Zool. 1868.

The series of figures for the past year represents :—

Perdix rubra	pl.	1	Charadrius cantianus	pl.	10
—— græca	„	2	Otis tetrax	„	17
Gallinula bailloni	„	3	Anser leucopsis	„	18
—— crex	„	4	Anas clangula	„	19
Glareola pratincola	„	5	Fuligula marila	„	20
Charadrius minor	„	6	*Heads of* Tetrao urogallus, T. tetrix, T. bonasia, T. scoticus, T. saliceti, and T. lagopus	„	21
Anas clypeata	„	7			
Fuligula cristata	„	8			
Charadrius hiaticula	„	9			

As before (Zool. Rec. iv. p. 76), there is no letterpress to these plates.

Cathartes californianus, the nestling figured [from apparently an older example than that represented, Ibis, 1860, pl. ix.]. S. F. Baird, P. Z. S. 1868, pp. 182, 183.

Menura superba, the nestling described. E. P. Ramsay, P. Z. S. 1868, p. 51.

M. victoriæ, the nestling described. J. Gould, *tom. cit.* p. 53.

Rhynchotis rufescens, the chick (which much resembles that of *Rhea americana*) described and figured (*cf.* Zool. Record, iv. p. 117). A. D. Bartlett, P. Z. S. 1868, pp. 114, 115, pl. xii.

OOLOGY AND NIDIFICATION.

Argyll [George John Douglas Campbell], Duke of. On Mr. Wallace's Theory of Birds' Nests. Journ. Travel and Nat. Hist. 1868, pp. 276–287.

We give below a very full abstract of Mr. Wallace's paper, on account of the novelty of the ideas it contains, and regret we cannot enter at the same length upon his opponent's views, which are very ably stated. The Duke of Argyll contends that the nest-building instinct is equally innate with the structure, habits, and intelligence of birds, and that all are strictly correlated together. Citing his instances in refutation of Mr. Wallace's theory (founded as that is on long personal observation of the most gorgeous of tropical birds) from the comparatively dully-coloured birds of the British Islands, the Duke lies under some disadvantage; but he certainly points out an omission in the theory when he suggests that one great object and use of some domed nests, and also of many nests being made in holes, is simply the better conservation of animal heat.

Bartlett, A. D. Notes on the Breeding of several Species of Birds in the Society's Gardens during the year 1867. Proc. Zool. Soc. 1868, pp. 114–116, pl. xii.

Twenty-four species are mentioned as having bred for the first time, the most remarkable of them having been *Rhynchotis rufescens* (*cf.* Zool. Record, iv. p. 117) and *Eurypyga helias*. *Rhinochetus jubatus* also laid an egg in 1868. The young of the first mentioned, and the eggs of all three, are figured—the latter unfortunately not so as to give any precise idea of their appearance.

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

On Plate III. of this work are figured the eggs of:—

Merula vulgaris (10), *Pica caudata* (2), *Garrulus glandarius* (3), *Corvus cornix* (2), *Turdus viscivorus* (3), *Cinclus aquaticus* (2), *Merops apiaster* (2), *Picus major* (2), *Cyanistes cæruleus* (3), *Parus ater* (2), *Hirundo rustica* (2), *Chlorospiza chloris* (3), *Troglodytes europæus* (2), *Mecistura caudata* (2), *Pyrgita montana* (6), *Calamoherpe turdoides* [sc. *arundinacea* (L.)] (4), *C. arundinacea* (Gmel.) [sc. *strepera* (Vieill.)], *Pratincola rubicola* (2), *Budytes flava* (2), *Fringilla cœlebs* (2).

BROWN, J. A. H. Ornithological Notes for the last Six Months, including Extracts from the Journal of a Nesting-Tour in Sutherland. Zoologist, Sec. Ser. pp. 1305–1311.

In continuation of a paper noticed last year (Zool. Record, iv. p. 77). The most remarkable occurrences recorded are the supposed breeding of *Fuligula ferina* and *Colymbus glacialis* in the county.

DYBOWSKI, B., and PARREX, A. [See "PALÆARCTIC REGION."]

A table showing the number of eggs laid by fifty-two species of Daurian birds is given.

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

FEILDEN, H. W. On the Nesting of the Egyptian Vulture (*Neophron percnopterus*). Zoologist, Sec. Ser. pp. 1281–1283.

These observations were made in India, and therefore refer to *N. ginginianus* (Lath.) (*cf.* Zool. Record, ii. p. 91).

HOLTZ, LUDWIG. Brutvögel der Insel Gottland. Journ. für Orn. pp. 100–131.

In continuation of the articles before noticed (Zool. Record, iii. p. 71) and of the same character. Twenty-three species are added to those which have before been observed by the author breeding on the island, but none of them demands any particular notice.

KÖNIG-WARTHAUSEN, RICHARD. Zur Fortpflanzungsgeschichte des Stentor-Röhrsängers, *Acrocephalus stentorius*. Journ. für Orn. 1868, pp. 135–137, Taf. ii. figs. 1, 2.

The nest and eggs are figured and described from examples obtained by Dr. von Heuglin.

MOSLEY, OSWALD. Nidification of the Bohemian Waxwing [*Ampelis garrulus*] in England. Zoologist, Sec. Ser. p. 1294.

This extraordinary statement rests on the evidence of the author's servants.

[MURRAY, ANDREW.] Reply to Mr. Wallace's Theory of Birds' Nests. Journ. Travel and Nat. Hist. 1868, pp. 137–145.

This paper, though published without the writer's name, is confessedly by the author of the 'Geographical Distribution of Mammals' (Zool. Record, iii. pp. 3–6), to whom, of course, the theory of Mr. Wallace (founded on a strict extension of the principle of Natural Selection, and of which a full abstract is given below) is distasteful; and that theory is met on general grounds.

Nathusius, W. von. Ueber Bildung der Schale des Vogeleies. Zeitschr. für die gesammt. Naturwissensch. 1868, pp. 19–21.

Remarks on the theory and investigations of Drs. Landois (Zool. Record, ii. pp. 85, 86) and R. Blasius (*op. cit.* iv. pp. 76, 77).

Ramsay, Edward P. Notes on Birds breeding in the Neighbourhood of Sydney. Ibis, 1868, pp. 271–280.

In continuation of the series of articles before noticed (Zool. Record, i. p. 65, ii. p. 90, iv. p. 78). The species treated of are *Monarcha trivirgata, Pardalotus punctatus, Hirundo frontalis, Cisticola ruficeps,* and *Excalfactoria australis.*

Wallace, A. R. A Theory of Birds' Nests: showing the Relation of certain Sexual Differences of colour in Birds to their Mode of Nidification. Journ. Travel and Nat. Hist. 1868, pp. 73–89. (Translation) Bibl. Univers. Arch. Sc. Phys. et Nat. 1868, xxxiii. pp. 5–30. (Abstract) Rep. Br. Assoc. Dundee, 1867, Miscell. Comm. p. 97.

The main features, the author argues, of its nidification are determined by the structure and habits of the species, so that a nest is delicate and elaborate in proportion to the organization of the builder. The materials also of the nest depend in like manner on the same properties, and are those which come most frequently before the bird's eyes. But two other causes, or "factors," must not be neglected; these are changed conditions of existence and the influence of hereditary habit; and instances of both are given. Hence many details of nidification must be unintelligible to us as being the results of habit persisting when the necessity for it is removed. Mr. Wallace then points out a relation existing between the plumage of the hen bird and the mode of nidification, and divides nests into two categories according as they conceal or expose the sitting bird, the first containing those of all hole-dwellers, purse-weavers, and dome-builders, which he maintains belong to those of species where the hens are gaily or conspicuously coloured; hence he arrives at the conclusion that the kind of nest included in the first category is a consequence of this brilliant colouring in the hen, as well as the converse, that when the hen is of dull and the cock of bright plumage, the nest is open and the sitting bird exposed. In support of this view he adduces as examples a great many families or natural groups of

birds; thus in the *Psittaci*, *Alcedinidæ*, and *Paridæ*, where the hens are as conspicuous as the cocks, the sitting-birds are concealed, while in the *Cotingidæ*, *Pipridæ*, and *Tanagridæ* the hens are soberly coloured and sit exposed on their nests. The author then proceeds to account for these facts, which he believes are owing to the greater necessity of protection to the hen than to the cock during incubation. He had previously found a similar state of things in diurnal *Lepidoptera*, and this made him apply the same solution in the case of birds. He accepts Mr. Darwin's doctrine of sexual selection to explain the brilliant colours of the males of various animals; but Mr. Wallace maintains that the fact of both sexes in many species being equally ornamental shows that there is a tendency on the part of both to inherit bright hues, and that when they are entirely wanting in the female it is because the possession of them would be injurious to her. Further, he denies, on the grounds already mentioned, that the mode of nidification in birds depends on the colour of the hen, but upholds the contrary opinion; since colour is known to be the most variable and easily modified character possessed by organized beings, consequently it serves more than any other the purposes of protection, and must be regarded as one of the most important agents in adapting animals and plants to the changes ever taking place in their "environment." [*Vide suprà*, Argyll, Duke of, and Murray, Andrew.]

The eggs of some twenty species of South-African birds described. E. L. Layard, Ibis, 1868, pp. 242–247.

Steatornis caripensis, its egg figured (woodcut) and described. P. L. Sclater, P. Z. S. 1868, pp. 73, 74.

Caprimulgus (*Stenopsis*) *bifasciatus*, its eggs figured. J. f. O. 1868, Taf. ii. fig. 3*.

Menura superba, its nest and eggs described. E. P. Ramsay, P. Z. S. 1868, pp. 49–51.

Hirundo alfredi (sp. n.), its eggs figured. J. H. Gurney, Ibis, 1868, p. 153, pl. iv. Nest described, E. L. Layard, *tom. cit.* p. 243.

Cisticola schœnicola, its eggs described (*cf.* Zool. Rec. ii. p. 91). W. E. Brooks, *tom. cit.* pp. 130, 131.

Donacola castaneothorax, its nest and eggs described. E. P. Ramsay, *tom. cit.* pp. 231–233.

The curious parallelism of the aberration from the normal colouring in the egg of *Petronia brachydactyla* among the *Fringillinæ*, and in the egg of *Melospiza lincolni* among the *Spizellinæ*, noticed. H. B. Tristram, *tom. cit.* p. 205.

Nucifraga caryocatactes, its breeding in Switzerland. G. Vogel, J. f. O. 1868, p. 329.

Caccabis græca and *C. saxatilis*, the difference in their eggs. H. B. Tristram, Ibis, 1868, pp. 213, 214.

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* The accompanying letterpress is at page 382, but did not appear within the year 1868.

ACCIPITRES.

Beavan, R. C. Sundry Notes on Indian Raptores. Proc. Zool. Soc. 1868, pp. 390–402, pl. xxxiv.

This paper belongs to the series of articles which the author has been publishing in 'The Ibis' (Zool. Rec. ii. p. 72, iv. p. 62, *et suprà*, p. 48). Eighty-one species are noticed, and *Neopus malaiensis* (Reinw.) [*nec* (Reinh.)] is figured.

Brehm, A. E. Die Raubvögel der deutschen Thiergärten. Journ. für Orn. 1868, pp. 46–51.

In continuation of the paper before noticed (Zool. Rec. iii. p. 72). Notes on *Astur*, *Nisus*, and *Melierax*.

Farman, C. On some of the Birds of Prey of Central Bulgaria. Ibis, 1868, pp. 406–414.

Thirteen species are noticed, and particulars given of the habits of most of them, especially in the breeding-season. *Vultur monachus*, *Falco sacer*, and *F. lanarius* are among the most remarkable.

Wallace, Alfred R. On the Raptorial Birds of the Malay Archipelago. *tom. cit.* pp. 1–27, pl. i.

——. Corrections of, and additions to, the Catalogue of the Raptorial Birds of the Malay Archipelago. *Tom. cit.* pp. 215, 216.

The generalities of these papers have been already mentioned ("Australian Region"). Out of the eighty-seven species enumerated in the first of them, fifty-three belong to *Falconidæ* (one of which is described as new), and thirty-five to *Strigidæ*. Fourteen of the *Falconidæ* are common to the Indian and Australian portions of the Archipelago, but only one of the *Strigidæ*. There are no *Vulturidæ*. The second paper adds three species (all *Falconidæ*) to the eighty-seven, and throws some doubt on the newly described one.

Cathartidæ.

Cathartes californianus, the nestling figured [from apparently an older example than that represented Ibis, 1860, pl. ix.]. S. F. Baird, P. Z. S. 1868, pp. 182, 183.

Vulturidæ.

Neophron percnopterus [sc. *ginginianus*] (*cf.* Zool. Rec. ii. p. 91), its mode of breeding in India. H. W. Feilden, Zool. S. S. pp. 1281–1283.

Neophron percnopterus, its occurrence in Essex. C. R. Bree, *tom. cit.* pp. 1456, 1457.

Gypaetus barbatus, its extinction in Transbaikalia. A. von Middendorff, Sib. Reise, Bd. iv. Th. 2, Lief. 1, p. 851.

Falconidæ.

Aquila imperialis, *A. fulvescens*, and *A. nævia*, remarks on their various stages of plumage, with a notice of a fourth doubtful species. W. S. Brooks, Ibis, 1868, pp. 349–352. This fourth species may be *A. hastata*, Less. J. H. Gurney, *tom. cit.* pp. 352, 353.

Aquila imperialis in Pomerania. W. Lühder, J. f. O. 1868, pp. 352, 353.

Aquila audax is figured. S. Diggles, Orn. Austral. pt. xviii.

Spizaetus nanus is described and figured as a new species from Borneo;

but subsequently it is said to be probably only the young of *S. dilboniger* (Blyth, Madr. Journ. xxxi. p. 145), which is quite distinct from *S. cirrhatus*. A. R. Wallace, Ibis, 1868, pp. 14, 215, 216.

Neopus malaiensis is figured. R. C. Beavan, P. Z. S. 1868, pp. 396, 397, pl. xxxiv.

Haliaetus albicilla breeds on the coast of Mantchouria, lat. 41° N., long. 136° E. J. H. Gurney, Ibis, 1868, pp. 129, 130.

Haliaetus leucocephalus, its fishing-habits. S. S. Haldeman, Am. Nat. 1868, pp. 615, 616.

Haliaetus vociferator [sc. *vociferoides*] is figured. H. Schlegel & F. P. L. Pollen, Rech. Faun. Madag. pl. 15.

Haliastur leucosternus is figured. S. Diggles, Orn. Austral. pt. xvii.

Pandion carolinensis, its habits. A. Fowler, Am. Nat. 1868, pp. 192–195.

Leucopternis superciliaris, *L. palliata*, and *L. semiplumbeus* are figured, and a synonymatic list of the eight known species given. P. L. Sclater & O. Salvin, Ex. Orn. pls. xxxviii., xlix., and lxi.

Buteo auguralis (Zool. Rec. iii. p. 73), its description translated into German. E. von Martens, J. f. O. 1868, pp. 67, 68.

Buteo tachardus, its occurrence in Switzerland. G. Vogel, *tom. cit.* p. 329.

Circus spilonotus, *C. melanoleucus*, and a third species, in colour similar to *C. hudsonius* ♂, are found in the Philippine Islands. J. H. Gurney, Ibis, 1868, p. 356.

Circus æruginosus, adult and immature, is figured (2 pls.). J. Gould, B. Gr. Br. pt. xiii.

Cymindis boliviensis is described as a new species from the interior of Bolivia, in size and figure entirely like the Brazilian *C. uncinata*, but with a rather longer beak. It is dusky-black, with the remiges and rectrices banded beneath with white. H. Burmeister, P. Z. S. 1868, pp. 633, 634.

Milvus regalis [sc. *ictinus*] is figured. J. Gould, B. Gr. Br. pt. xiii.

Falco peregrinus [sc. *melanogenys*] is figured. S. Diggles, Orn. Austral. pt. xx.

Falco babylonicus, *F. sacer*, and *F. lanarius* are figured. J. Gould, B. As. pt. xx.

Falco candicans and *F. aurantius* are figured. D. G. Elliot, B. N. Am. pts. xii. and xi.

Falco eleonoræ in confinement and its breeding-place at Mogador described. T. Waite, P. Z. S. 1868, p. 567.

"*Falco vespertinus* var. *amurensis*, Radde" (Reis. S. O.-Sib. ii. p. 102), is now described and figured as a new species, under the name of *Erythropus amurensis*, the subjects of the plate being an adult male and female from Natal (!) and a nestling from Northern China. J. H. Gurney, Ibis, 1868, pp. 41–43, pl. ii.

Tinnunculus cenchris is said to have occurred in Yorkshire. W. S. Dallas, Ann. & Mag. N. H. 4th ser. ii. pp. 75, 76. [Very doubtful.]

Astur (*Leucospiza*) ——? Two specimens from Queensland, supposed to be of a species distinct from *A. rayi* and *A. novæ-hollandiæ* (which the author regards as identical), being of a larger size and stronger build, and having the upper surface brown, are described, but no name is given to it. E. P. Ramsay, P. Z. S. 1868, pp. 381, 382.

Accipiter rubricollis, Wall. (P. Z. S. 1863, p. 21), and *A. muelleri*, Wall. (P. Z. S. 1865, p. 475), are respectively distinct from *A. erythrauchen*, G. R.

Gray (P. Z. S. 1860, p. 344), and *A. griseogularis*, ejusd. (*tom. cit.* p. 343), with which they have been confounded—the former by both Schlegel (Valkv. Nederl. Ind. pl. iii. fig. 2) and Kaup (P. Z. S. 1867, p. 177), the latter by the last-named writer (*tom. cit.* p. 175). *A. equatorialis* and *A. sylvestris* are also good species. A. R. Wallace, Ibis, 1868, pp. 7–10.

"*Accipiter cruentus*, Wall." (P. Z. S. 1863, p. 484), from Timor, is really *A. torquatus* (Temm.); but *A. torquatus*, Vig. & Horsf., is *Sparvius cirrhocephalus*, Vieill. Whether *A. cruentus* is a good species seems doubtful. *Id. tom. cit.* pp. 11, 12.

Accipiter, sp., from Dauria, of small size, rufescent beneath barred with dusky (*cf.* Radde, Reis. S. O.-Sib. ii. p. 110). B. Dybowski & A. Parrex, J. f. O. 1868, p. 331.

Accipiter chilensis is figured. P. L. Sclater & O. Salvin, Ex. Orn. pl. xxxvii.

Accipiter gabar has never been found in Portugal as has been asserted of it (Naumannia, 1856, p. 267) under the vague name of "*Astur micronisus*, Bp." A. C. Smith, Ibis, 1868, p. 436.

Nisus communis preying on *Sciurus vulgaris*. K. Müller, J. f. O. 1868, pp. 245, 246.

Strigidæ.

Syrnium fulvescens is a new species from Guatemala, resembling *S. nebulosum* but smaller, more fulvous, and the toes bare except at the upper part of the phalanges. It is *S. nebulosum*, Scl. & Salv. (Ibis, 1859, p. 221), *nec Strix nebulosa*, Forst. A list of the five American species of the genus known to the authors is given, and it is remarked that species of the genus *Ciccaba* have been much mixed up with them, though the presence of the ear-opercle in the latter affords a ready means of distinguishing between them. P. L. Sclater & O. Salvin, P. Z. S. 1868, pp. 58, 59.

Athene strenua is figured. S. Diggles, Orn. Austral. pt. xix.

Athene noctua, a variety from Dauria is described, of large size, with tarsi and toes feathered and pale in colour. B. Dybowski & A. Parrex, J. f. O. 1868, p. 331.

Noctua polleni (Zool. Rec. ii. p. 94) is figured. H. Schlegel & F. P. L. Pollen, Rech. Faun. Madag. pl. 17.

Micrathene whitneyi (Zool. Rec. iii. p. 75) is figured. D. G. Elliot, B. N. Am. pt. xii.

Gymnoglaux lawrencii is described and figured from Cuba, differing from *G. nudipes* from Porto Rico and the Virgin Islands by being entirely fuscous above, sprinkled with white spots*, and the tarsi almost wholly bare. The two birds were formerly distinguished by Mr. Lawrence (Ann. Lyc. N. H. New York, 1860, pp. 257, 258), who applied the name *nudipes* to the Cuban form, calling the more eastern one *newtoni*. It is, however, clear that the Porto Rico bird must bear the name *nudipes*, the type specimen, still in Paris, having been brought thence by Maugé (Daud., Tr. d'Orn. ii. p. 199); and it is

* The plate represents *G. lawrencii* as being rather reddish-brown than "fuscous;" but specimens from the Virgin Islands also have white spots (*cf.* Ibis, 1859, pp. 64–66, pl. i., and 1860, p. 209); the difference in the tarsus, shown by the authors in a woodcut, is, however, a perfectly good diagnostic character; and in each of these little Owls, as in many other species, there is no doubt a reddish as well as a fuscous phase, whether owing to age or sex seems to be at present undecided.

accordingly the Cuban bird which required a designation. P. L. Sclater & O. Salvin, P. Z. S. 1868, pp. 327–329, pl. xxix.

Pholeoptynx cunicularia, from La Plata, its habits in confinement. P. L. Sclater, P. Z. S. 1868, p. 261.

Glaucidium siju, its habits in confinement. C. Wright, Am. Nat. 1868, pp. 420–421.

Scops barbarus is a new species from Vera Paz, Guatemala, readily distinguishable from every other American *Scops*, except *S. flammeola*, by its small size. From that it is to be distinguished by the less amount of feathering on the tarsus; and woodcuts showing the difference are given, as well as a list of the seven American species known to the authors. It is *S. flammeola*, Salvin (Ibis, 1861, p. 355), *nec* Kaup. P. L. Sclater & O. Salvin, P. Z. S. 1868, pp. 56–58. Both species figured, and a complete list of the American species of the genus given. *Iid.* Ex. Orn. pls. l., li.

Scops asio, its breeding-habits. E. A. Samuels, Am. Nat. 1868, pp. 47, 48; A. Fowler, *op. cit.* p. 109; W. Wood, *op. cit.* pp. 379, 380. In confinement, C. J. Maynard, *tom. cit.* pp. 73–77. Specifically identical with *S. nævia*. J. A. Allen, *tom. cit.* 1868, pp. 327–329. The contrary opinion possibly true. W. Wood, *tom. cit.* pp. 370–375.

Scops zorca is figured. J. Gould, B. Gr. Br. pt. xiii.

PSITTACI.

Buxton, C. Acclimatization of Parrots. Zool. S. S. pp. 1395–1401; Ann. & Mag. N. H. 4th ser. ii. pp. 381–386.

Nearly fifty examples have been at large at Northrepps, in Norfolk; but the species are not precisely named. Some of them have bred.

Finsch, Otto. Die Papageien, monographisch bearbeitet. Zweiter Band. Hälfte I., II. Mit 5 Tafeln und Uebersichts-Tabellen zur geographischen Verbreitung. Leiden: 1868. Roy. 8vo, pp. 996.

We last year, at some length, though still imperfectly, spoke (Zool. Record, iv. pp. 83–85) of the extraordinary pains bestowed by the author on the first volume of this work. The second volume, published in two parts, justifies the praise we then awarded to him. The subject has been so thoroughly well handled that this monograph must be the text-book for many years; and though we do not altogether agree with Dr. Finsch in his mode of classification, we believe we shall be consulting the convenience of our readers by adopting in the main his system. We shall still continue to regard the *Psittaci* as forming an order, but the (5) different groups defined by the author we shall follow, only raising them from the rank of "subfamilies" to that of families, as under:—*Strigopidæ* *, *Plictolophidæ*, *Aridæ* *, *Psittacidæ*, and *Trichoglossidæ*. The genera composing these groups we named last year, and need only remark that, instead of *Coryllis*, Finsch, we shall continue to use the older name *Loriculus*, "barbarous" though it be. In these 26 genera Dr. Finsch places 354 good species †, besides taking notice of 41

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* To use *Stringopidæ* and *Sittacidæ*, as no doubt the author would have us do, seems to us to savour too much of præterpurism.

† That is to say, 351 in the body of the work, and 3 more in the Supplement, which is brought down to 1st June, 1868.

doubtful ones; but of all these a single species only (see *Aridæ*) is described as being entirely new, though several other new names, both generic and specific, are given. A very full Index completes this extremely satisfactory work, and it is greatly to be wished that the five coloured plates were at all equal to the company in which they find themselves.

Milne-Edwards, Alphonse. Mémoire sur un *Psittacien* fossile de l'île Rodericues. Rev. et Mag. de Zool. 1868, pp. 7–11.

An abstract of the paper noticed last year (Zool. Record, iv. p. 85).

Aridæ.

Palæornis hodgsoni and *P. peristerodes* are names proposed to be given to *P. schisticeps*, Hodgson (As. Res. xix. p. 178), and *P. columboides*, Vigors (Zool. Journ. v. p. 274). O. Finsch, Papageien, ii. pp. 50–52, 74–77.

Palæornis lathami is the name proposed for *Psittacus erythrocephalus*, var. γ. *borneus*, Gmel. (S. N. i. p. 325), *Palæornis borneus*, Wagl., a species having many other synonyms. *Id. tom. cit.* pp. 66–70.

Geopsittacus (*Pezoporus*) *occidentalis*, its habits in confinement (*cf.* Zool. Rec. iv. p. 86), external and internal structure very minutely described, and illustrated with woodcuts of the head, foot, and sternum. *Platycercus* and *Strigops* are the extremes of a Psittacine group, of which *Pezoporus*, including *Geopsittacus*, is the central form. J. Murie, P. Z. S. 1868, pp. 158–165.

Pezoporus formosus is figured. S. Diggles, Orn. Austral. pt. xvi.

Brotogerys subcærulea (Lawr. Ann. Lyc. N. York, vii. p. 475) and *B. chrysosema* (Zool. Rec. i. p. 69) are figured. O. Finsch, Papageien, ii. pp. 97, 107, pls. 2, 3.

Bolborhynchus luchsi is a new species, from Bolivia, of a dull grass-green, with the crown, cheeks, chin, throat, and breast grey, free from light tips to the feathers; the under wing-coverts and sides of the belly distinctly olive-yellow. It is *Myiopsitta murinoides*, Souancé (R. Z. 1856, p. 65) and *Conurus murinoides*, G. R. Gray (List B. Br. Mus. *Psittacidæ*, p. 43), *nec* Temm. *Id. tom. cit.* pp. 121–123.

Platycercus forsteri is the name given to a species from New Zealand, which has been confounded by many writers with *P. pacificus*, this last being proper to Otaheiti. *Id.* J. f. O. 1867, pp. 325, 346; Papag. ii. pp. 287–289.

Psittacidæ.

Pionias obiensis is a new species, from the island of Obi, entirely resembling *P. cyanicollis*, with which it has been confounded by Schlegel (N. T. D. 1866, p. 334), except that it has a copper-brown rump. O. Finsch, Papageien, ii. pp. 389, 390.

Pionias gerontodes is the name proposed to be given to *Psittacus seniloides*, Mass. & Souancé (R. Z. 1854, p. 73). *Id. tom. cit.* pp. 455–457.

Chrysotis guatemalæ, Hartl., and *Coryllis* [sc. *Loriculus*] *exilis* (Schl.) are figured. *Id. tom. cit.* pp. 562, 729, pls. 4, 5.

Coryllis [sc. *Loriculus*] *hartlaubi* is the name given to *L. melanopterus*, G. R. Gray (List B. Br. Mus. *Psittacidæ*, p. 55), *nec* Scop., and *L. apicalis*, G. R. Gray (*op. cit.* p. 56), *nec* Souancé. *Id. tom. cit.* pp. 711–713.

Cyclopsitta coxeni is figured. S. Diggles, Orn. Austral. pt. xix.

TRICHOGLOSSIDÆ.

Domicella schlegeli is the name given to what is possibly *Psittacus squamatus*, Bodd., with which it has been in part identified by Schlegel (Mus. P.-B., *Psittaci*, p. 124). It has also been mentioned under several other names. O. Finsch, Papageien, ii. pp. 792–794.

Domicella fuscata (Blyth) is figured. *Id. tom. cit.* p. 807, pl. 6.

Trichoglossus swainsoni, *T. rubitorques* [lege *rubritorquatus*], and *Lathamus discolor* are figured. S. Diggles, Orn. Austral. pts. xvii., xviii.

PICARIÆ.

PICIDÆ.

GRAY, G. R. List of the Specimens of Birds in the Collection of the British Museum. Part III. Sections III. & IV. *Capitonidæ* and *Picidæ*. London: 1868. Sm. 8vo, pp. 23–128.

The object of this work is to give a complete list, with synonyms, of all the known species of these two families, indicating those which are represented by specimens in the Museum.

Picus macæi said (Jerd. B. Ind. i. p. 273) to occur in Ceylon, probably does not do so. E. L. Layard, Ibis, 1868, p. 249.

Picus khan (Zool. Record, ii. p. 96) is *P. syriacus*, Hempr. & Ehrenb. T. Salvadori, Atti Accad. Sc. Torino, 1868, pp. 287, 288.

Picus (*Bæopipo*) *aurantiiventris* is a new species from Borneo, distinguishable from all others of the group by the fine orange or golden-yellow of the lower parts. *Id. tom. cit.* pp. 524, 525.

Hemicercus brookianus is described as a new species from Borneo, very like *H. sordidus* from Malacca, but having those parts of a lemon-yellow which are in the latter cream-colour, and the lower parts decidedly olivaceous [*cf.* Sclater, P. Z. S. 1863, p. 211]. *Id. tom. cit.* pp. 525–527.

Gecinus viridis, on the benefits it confers. — Vincelot, Ann. Soc. Linn. Maine-et-Loire, 1868, p. 117.—Seguier, Bull, Soc. Imp. d'Acclimat. 1868, pp. 524, 525.

Colaptes auratus, an example induced to lay *thirty-three* eggs instead of the normal *six* [*cf.* Mag. Nat. Hist. vii. (1834) p. 465]. W. K. Kedzie, Am. Nat. 1868, p. 382.

Melanerpes formicivorus, the method in which this stows its store of acorns (*cf.* Zool. Record, iii. p. 78, and Ibis, 1868, pp. 116, 117) illustrated by a figure. F. Sumichrast, Mem. Boston. Soc. N. H. i. pp. 562, 563.

Xenopicus albolarvatus is figured. D. G. Elliot, B. N. Am. pt. ix.

TROGONIDÆ.

Trogon bairdi is a fine new species from Costa Rica, above much resembling *T. melanocephalus*, but having a scarlet instead of a yellow abdomen, and a greater extent of white on the tail; the bill also is much larger and stronger. G. N. Lawrence, Ann. Lyc. N. H. New York, 1868, pp. 119, 120.

BUCCONIDÆ.

Monasa grandior is a new species from Costa Rica and (?) Mosquitia, re-

sembling *M. morpheus*, from Brazil, but larger and with a blacker head. P. L. Sclater and O. Salvin, P. Z. S. 1868, p. 327.

Momotidæ.

Urospatha is a new genus, with the characters of *Momotus* or *Prionites* of recent authors, but having ten rectrices, the bill high, stout, and strongly serrated. The type is

Prionites martii, Spix (Av. Bras. ii. p. 64, pl. 60). [*Cf.* Ibis, 1869, p. 222.]

Alcedinidæ.

Sharpe, R. B. A Monograph of the *Alcedinidæ* or Kingfishers. London: 1868. Parts i. and ii. Roy. 8vo.

A work of considerable pretension, but one which entirely fulfils all the requirements of such a monograph at the present day. The bibliographical part is worked out with much more than common care, as also are the diagnoses, the descriptions, the particulars of geographical distribution, and, when it can be obtained, the account of the habits of the different species. The plates, eight in each part, are beautiful.

Part i. contains accounts and figures of *Caridonax fulgidus*, *Carcineutes pulchellus*, *Halcyon pileata*, *H. dryas*, *Ceyx cajeli*, *C. wallacii* (vide infrà), *Ceryle alcyon*, and *C. superciliosa*. Part ii. in like manner illustrates *Cittura sanghirensis* (vide infrà), *C. cyanotis*, *Ceyx lepida*, *C. solitaria*, *C. tridactyla* *, *C. melanura*, *Carcineutes melanops*, and *Ceryle cabanisi*. [*Cf.* Ibis, 1868, pp. 472, 473; 1869, pp. 215, 216.]

——. On two new or little-known Kingfishers belonging to the Genera *Ceyx* and *Cittura*. Proc. Zool. Soc. 1868, pp. 270–272, pl. xxvii.

The first is *Ceyx wallacii*, from the Sula Islands, nearly allied to *C. lepida*, with which it has been confounded (Wallace, P. Z. S. 1862, p. 338), but differing from that species in the cobalt instead of ultramarine (or violet) tinge of the blue on the head, cheeks, and back, as well as in the wholly black scapulars and other minor distinctions. A list of the species of *Ceyx* known to the author, eight in number, is given (*vide infrà*).

The second is described and figured as a new species, *Cittura sanghirensis*, from the island of Sanghir, easily distinguished from *C. cyanotis* by its larger size, black forehead, deep blue on the wing-coverts, and the blue-black band on the side of the head.

——. On the Genus *Ceyx*. Proc. Zool. Soc. 1868, pp. 587–599.

Ten species of the genus are herein differentiated, being two more than were enumerated by the author in the preceding paper:—*C. dillwyni*, sp. n., and *C. philippensis*, Gould (*vide infrà*). The confusion which has long existed as to the true *C. tridactyla* (Pall.) and *C. rufidorsa* (Strickl.) is also attempted to be cleared up. The paper concludes with a synonymatic, descriptive, and geographical list of the species.

Ceyx philippensis is a new species resembling *C. cyanopectus*, but with a shorter bill, richer colouring, the white patch on the side of the neck larger and purer, without the indigo-blue band, and with the flanks rufous. J. Gould, P. Z. S. 1868, p. 404.

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* Corrected in part iii. (1869) to *C. rufidorsa*.

Ceyx dillwyni is a new species from Labuan and Borneo, distinguishable from the true *C. rufidorsa* by its scapulars, which are black, washed with blue, instead of lilac-red. It is *C. tridactyla*, Reichenb. (Handb. *Alced.* fig. 3389) and Motley & Dillwyn (N. H. Labuan, p. 13), *nec* Pall., and *C. rufidorsa* Sclat. (P. Z. S. 1863, p. 213), *nec* Strickl. R. B. Sharpe, *tom. cit.* pp. 588, 591, 593, 599.

Halcyon orientalis is a new species from Mozambique, nearly resembling *H. fuscicapillus*, but differing in its smaller size and its nearly pure white breast, without any manifest brown streaks. W. Peters, J. f. O. 1868, p. 134.

Ceryle alcyon, its habits. A. Fowler, Am. Nat. 1868, pp. 403–405.

Capitonidæ.

Gray, G. R. List of the Specimens of Birds in the Collection of the British Museum. [See "*Picidæ*."]

Megalæma lagrandieri is described as a new species from Cochin-China. J. Verreaux, Ann. Sc. Nat. 5 sér. x. p. 67.

Rhamphastidæ.

Aulacorhamphus sexnotatus is a new species, supposed to be from Peru, about the size of *A. hæmatopygius*, but differing from that, and also from *A. castaneorhynchus*, in the third rectrix having the chestnut mark at the tip on the inner side only, besides some other characters. J. Gould, P. Z. S. 1868, pp. 219, 220.

Bucerotidæ.

Buceros corrugatus, from Borneo, in confinement. P. L. Sclater, P. Z. S. 1868, p. 261.

Hydrocissa migratoria is the name proposed for a supposed new species from Malacca. — Maingay, Proc. As. Soc. Beng. 1868, pp. 196–198.

Rhynchoceros erythrorhynchus and *Bucorax abessinicus*, notes on, in North-eastern Africa. E. Marno, Zool. Garten, 1868, pp. 240, 241.

Upupidæ.

Fregilupus borbonicus is a name proposed for the extinct [?] *F. varius* (Bodd.), *F. capensis* (Gmel.), *F. madagascariensis* (Shaw). A. Vinson, Bull. Soc. Imp. d'Acclimat. 1868, p. 627.

Upupa epops is figured. J. Gould, B. Gr. Br. pt. xiv.

Musophagidæ.

Sclater, P. L. Turacoes and their Distribution. Stud. and Intell. Observ. Aug. 1868, pp. 1–6.

Of the same character as the papers on Barbets and Bell-birds noticed last year (Zool. Record, iv. pp. 88, 94), and illustrated by a coloured figure of *Corythaix leucolopha*.

Turacus albovittatus, the colouring-matter of the rosy patches of some of its wing-feathers, before known to be soluble in water, is proved to contain copper. A. Church, Stud. and Intell. Observ. i. p. 161; Ibis, 1868, pp. 133, 134.

Cuculidæ.

Cuculus canorus, on the similarity of its eggs to those of the foster-parents chosen for its young: E. F. von Homeyer, J. f. O. 1868, p. 51. Notes on its eggs; A. von Homeyer, *tom. cit.* p. 140. Considerations on Dr. Baldamus's theory as to the colouring of its eggs (Zool. Record. ii. p. 99, iv. p. 89): A. C. Smith, Zool. S. S. pp. 1105–1118. English translation of Dr. Baldamus's original paper (Naumannia, 1853, pp. 307–326), but without the very necessary plate; *Id. tom. cit.* pp. 1145–1166. Error corrected: E. R. Alston, *tom. cit.* p. 1255. Habits of the species in confinement: J. R. A. Briggs, *tom. cit.* pp. 1208–1211; R. Essery, *tom. cit.* pp. 1480, 1481. The eggs agree in colour with those of its foster-parents: J. A. H. Brown, *tom. cit.* p. 1219. An instance to the contrary: J. Cordeaux, *tom. cit.* p. 1285. The young with other cage-birds: G. Brucklacher, Zool. Garten, 1868, pp. 154, 155. The behaviour of two young in one nest: A. Müller, *tom. cit.* pp. 345–350. Broods its eggs! *Id.* (*fide* W. Kiessel) *tom. cit.* pp. 366–373. On its eggs—additional proof of the author's theory: E. Baldamus, Zeitschr. gesammt. Naturwissensch. 1868, pp. 21–23.

Cuculus (*Chrsococcyx*) *auratus* observed feeding its young. M. T. von Heuglin, J. f. O. 1868, p. 212.

Chrysococcyx russata is a new species from Cape York, in size rather smaller than the one or more [Qu. *C. plagosus* aut *C. basalis*?] from the south coast of Australia, but having a stouter bill, like the Port-Essington *C. minutillus*. It differs, however, from every other species in having the basal portions of the primaries buff beneath. A rufous tint, moreover, pervades the upper surface, the tail is of a deeper rufous, and there are some other distinctive marks. J. Gould, P. Z. S. 1868, pp. 74–76.

Caprimulgidæ.

Podargus ——? Two species of this genus from Queensland are supposed to be new, but no descriptions of them are given, nor are they named. E. P. Ramsay, P. Z. S. 1868, pp. 382, 383.

Ægotheles novæ-hollandiæ is figured. S. Diggles, Orn. Austral. pt. xvi.

Steatornis caripensis, its eggs figured (woodcut) and described. P. L. Sclater, P. Z. S. 1868, pp. 73, 74.

Caprimulgus mossambicus is described, for the first time, from Mozambique. It is *C. mossambiquus*, Licht., Nomencl. Av. 1854, p. 62 [*nec* p. 65 *ut cit.*]. It seems to agree with "*C. fossi*, Verr.," Hartl. (Ornith. Westafr. p. 23), in the colour of its tail-feathers, but, according to the description, that has no white or golden-yellow round spots on the tips of the wing-coverts, nor have its secondaries white or yellow tips. W. Peters. J. f. O. 1868, p. 134.

Caprimulgus (*Stenopsis*) *bifasciatus*, its eggs figured. J. f. O. 1868, Taf. ii. fig. 3.

Stenopsis candicans, *S. langsdorffi*, and *S. platura*, as also *Antrostomus cortapau*, are described as if they were new species; but the first three, though no mention of the fact is made by the author, have been previously described by Mr. Sclater (*cf.* Zool. Rec. iii. p. 82), and the last is confessedly the same as *A. rutilus*, Burm., Syst. Uebers. ii. p. 385. A. von Pelzeln, Orn. Bras. pp. 12, 13, 49–56.

Stenopsis macrorhyncha is described as a new species from South America, very like *S. bifasciata*, but smaller, paler above, and with a much larger bill. T. Salvadori, Atti Soc. Ital. Sc. Nat. vol. xi. fasc. iii. 16 Sept. 1868*.

Scotornis nigricans is described as a new species from the Rio Blanco [*qu.* in Brazil ?], nearly allied to *S. longicauda*, but darker. *Id. loc. cit**.

Cypselidæ.

Chætura sclateri is a hitherto undescribed species, from Borba on the Rio Madeira, allied to *C. cinereiventris*, Sclat. (Cat. Am. B. p. 283), but having a dark bluish ash-grey belly, like the lower part of the back and upper tail-coverts. A. von Pelzeln, Orn. Bras. pp. 10, 50.

Chætura semicollaris is figured, and a complete list of the American species of the genus given. P. L. Sclater & O. Salvin, Ex. Orn. pl. lii.

Trochilidæ.

Eutoxeres heterura and *E. salvini* are described as new species: the former from Central Ecuador, resembling *E. aquila* from New Granada, but with a uniformly coloured tail, and the pectoral striæ black and white instead of black and buff; the latter from Veragua and Costa Rica, is allied to the former, but with the rectrices tipped with white, and buff-coloured gular striæ. J. Gould, Ann. & Mag. N. H. 4th ser. i. pp. 455–457.

Phaethornis anthophila (Bourc. R. Z. 1843, p. 71) was obtained by Natterer and is described. A. von Pelzeln, Orn. Bras. pp. 27, 56.

Ametrornis abnormis, named by Reichenbach (J. f. O. 1853, Extrah. p. 14), is fully described. A. von Pelzeln, Orn. Bras. pp. 27, 56, 57.

Heliopædica xantusi is figured. D. G. Elliot, B. N. Am. pt. xi.

Thalurania iolænus, named by Reichenbach (J. f. O. 1853, Extrah. p. 8), is fully described. A. von Pelzeln, Orn. Bras. pp. 30, 57, 58.

Microchera parvirostris (Lawr.) (Zool. Rec. ii. p. 101), the male described. G. N. Lawrence, Ann. Lyc. New York, 1868, pp. 122, 123.

Gouldia melanosternon [lege *melanosternum*] is a new species from Peru, closely allied to *G. langsdorffi* from Brazil, but smaller, and wanting the thoracic band. J. Gould, Ann. & Mag. H. N. 4th ser. i. p. 323.

Trochilus colubris [?], an albino noticed. L. A. Millington, Am. Nat. 1868, p. 110.

Atthis heloisæ is figured. D. G. Elliot, B. N. Am. pt. xii.

Cephalolepsis beskii is described as a new species from Brazil, larger than *C. delalandii*, more olive-green above, pure violet beneath, and with a very long ornamental feather at the back of the head. From *C. loddigesi* it differs in the green top of the head, the duller colour of the whole under surface, and some other points. A. von Pelzeln, Orn. Bras. p. 58.

Petasophorus cyanotis and *P. thalassina*: a form intermediate between these two occurs in Costa Rica (J. Cabanis, J. f. O. 1862, pp. 162, 163), which, if it be distinct, is proposed to be called *P. cabanisi*. G. N. Lawrence, Ann. Lyc. New York, 1868, pp. 125, 126.

Eriocnemis smaragdinipectus is a new species from Ecuador, closely allied

* We are unable to give the precise reference, having only seen a separately printed copy (kindly sent us by the author) of this paper, in which the original pagination is not preserved.

to *E. vestita* from Bogota; but the green on the breast begins immediately below the blue throat-spot, without the intervention of a black band, and the feathers there are of a different structure. J. Gould, Ann. & Mag. N. H. 4th ser. i. p. 322.

Agyrtria meliphila [qu. *melitophila*?] and *A. media* are doubtfully named as new species procured by Natterer, the first from Barcellos, the second from Matogrosso. *A. mellisuga* (Linn.) is also said to have been obtained by the same naturalist on the Rio Branco. A. von Pelzeln, Orn. Bras. pp. 29, 57.

Eupherusa egregia is a new species from Veragua, allied to *E. eximia*, but having the outer webs of the lateral rectrices white. P. L. Sclater & O. Salvin, P. Z. S. 1868, pp. 389, 390.

PASSERES.

Pittidæ.

Pitta simillima is a new species from Cape York, very like *P. strepitans*, but smaller, and of a deeper buff beneath (*cf.* Zool. Rec. iv. p. 91). J. Gould, P. Z. S. 1868, pp. 75, 76.

Pitta bertæ is a new species from Borneo very like *P. cyanoptera*, but distinguished by its smaller size, the light blue of the rump, the rose-coloured middle of the abdomen, and the little white spot on the first of the remiges only. T. Salvadori, Atti Accad. Sc. Torino, 1868, pp. 527, 528.

Formicariidæ.

Sclater, P. L. Descriptions of some New or little-known Species of Formicarians. Proc. Zool. Soc. 1868, pp. 571–575, pl. xliii.

Five species appear to be described as new, and a sixth referred to a new genus. The author's collection now includes 381 specimens belonging to 178 species of the family.

Thamnophilus nigriceps is a new species from Bogota, small and weakly formed, about the size of *T. doliatus*, and but for its long tail might go with *Dysithamnus*. It is readily distinguishable by its black head and breast, which are marked with white shaft-spots, and rufous wings and tail. P. L. Sclater, P. Z. S. 1868, p. 571.

Thamnophilus jani, De Filippi (Mus. Mediol. p. 32), is the female of *T. nævius* (Gm.). T. Salvadori, Atti Accad. Sc. Torino, 1868, p. 274.

Neoctantes is a new genus proposed for the reception of *Xenops niger*, Von Pelzeln (Sitz. k.-k. Akad. Wien, 1859, p. 111). It belongs to the Thamnophiline group, of which it has the general appearance, but has the bill compressed and somewhat recurved, the nostrils open, the culmen straight, somewhat sloping, and a little curved at the tip, the edges slightly ascending, the gonys recurved and strongly ascending, the wings short, the fifth, sixth, and seventh remiges nearly equal and longest, the feet as in the smaller species of *Thamnophilus*. The head, wing, and foot are figured (woodcut). P. L. Sclater, P. Z. S. 1868, pp. 571, 572.

Thamnistes affinis, Salvad. (Zool. Rec. ii. p. 101), is *Thamnomanes glaucus*, ♀, Cabanis. P. L. Sclater & O. Salvin, P. Z. S. 1868, p. 175, note.

Heterocnemis simplex is a new species from Surinam, strongly built and

having the divisions of the anterior scutes of the tarsus nearly obsolete. P. L. Sclater, P. Z. S. 1868, pp. 573, 574*.

Myrmetherula minor, Salvad., and *Myrmeciza marginata*, ejusd. (Zool. Rec. ii. p. 102), are respectively *M. brevicauda* (Swains.) and *M. ruficauda* (Max.). P. L. Sclater & O. Salvin, P. Z. S. 1868, p. 175, note.

Myrmetherula modesta is a new species from Costa Rica, not much resembling any other. It is about the size of *M. fulviventris* (Zool. Rec. i. p. 74), but has a much narrower and weaker bill, larger wings, and no spots on the wing-coverts. G. N. Lawrence, Ann. Lyc. N. H. New York, 1868, p. 108.

Formicivora genei [lege *genæi*], De Filippi (Mus. Mediol. p. 31), is distinct from *F. striata* (Spix), with which it has generally been confounded. *F. erythrocerca*, Scl. (P. Z. S. 1858, p. 240, pl. 97), is synonymous with the former, and the name is of later date. T. Salvadori, Atti Accad. Sc. Torino, 1868, pp. 268–270.

Cercomacra napensis is a new species from the Rio Napo in Ecuador, distinguishable from *C. cinerascens*, Sclat. (P. Z. S. 1857, p. 131), with which it had been (*op. cit.* 1858, p. 245, and Sclat. Cat. Am. B. p. 184) confounded, by its entirely unspotted wings and less white on the rectrices. P. L. Sclater, P. Z. S. 1868, pp. 572, 573.

Hypocnemis hypoxantha is described and figured as a new species from the Upper Amazon, allied to *H. flavescens* (Zool. Rec. i. p. 74), but with the eyebrows and the whole underside of the body sulphur-yellow. P. L. Sclater, P. Z. S. 1868, p. 573, pl. xliii.

Conopophaga gutturalis is a new species from New Granada, resembling *C. cucullata*, Sclat. (P. Z. S. 1856, p. 29); but that species has no postocular tuft and a yellow bill. The present has a white postocular tuft, as in *C. aurita* (Gm.). P. L. Sclater, P. Z. S. 1868, p. 574.

Menuridæ.

Menura superba, a very full account of its habits, especially of its mode of breeding, and a description of its young, which do not leave the nest till they are eight or ten weeks old. South-Australian examples (*M. victoriæ*, Gould†) do not very greatly differ from those obtained in New South Wales, the former being only of a slightly different tint, and having bars of the outer rectrices more defined. The specific rank of *M. alberti* is not questioned. E. P. Ramsey, P. Z. S. 1868, pp. 49–52.

Menura. The family to which this genus belongs still an open question; the eggs and young (two days old) of "*M. victoriæ*" exhibited. The latter is thickly covered above with a long sooty-black down, which takes the form of a cowl over the bird's head; beneath, the throat, flanks, and thighs are nearly naked; the tarsi, toes, and nails are comparatively non-developed; and from all these facts it is evident that the young must be entirely dependent upon its parents for food and protection for a long time. J. Gould, *tom. cit.* pp. 52, 53.

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* It may be doubted whether this species should rightly be included in the present Record, as the remarks upon it refer to the second part of Herr von Pelzeln's 'Ornithologie Brasiliens,' which bears date 1869.

† First named P. Z. S. 1864, p. 23, but not diagnosed till 1865, Handb. B. Austral. i. p. 303.

Dendrocolaptidæ.

"*Furnarius tricolor*, Burm.," is described as a new species from Bolivia. C. Giebel, Zeitschr. gesammt. Naturwissench. 1868, pp. 11–13.

Synallaxis sulphurifera is described as a new species from Buenos Ayres, having the longer and rather curved bill of *S. striaticeps*, D'Orb., but the broad and long-pointed rectrices of *S. spixi*, Sclat. (P. Z. S. 1856, p. 98). H. Burmeister, P. Z. S. 1868, p. 636.

Synallaxis rufigenis is a new species from Costa Rica, somewhat resembling *S. erythrops*, but with an olive crown and greyish-white chin, besides wanting the pale cinnamon-colour on the throat and breast, and having darker under wing-coverts and a larger bill. G. N. Lawrence, Ann. Lyc. N. H. New York, 1868, p. 105.

Oxyrhamphus frater is a new species from Veragua, in colour resembling *O. flammiceps*, but with a longer bill, shorter wings, and much shorter tail. The genus is spoken of as belonging to a family "Oxyrhamphidæ." P. L. Sclater & O. Salvin, P. Z. S. 1868, pp. 322, 326, 327.

Sittasomus stictolæmus is a hitherto undescribed species from Borba on the Rio Madeira, where it was obtained by Natterer. A. von Pelzeln, Orn. Bras. pp. 42, 59, 60.

Dendrocincla ruficeps is a new species from the Isthmus of Panama, like *D. homochroa* (Scl. P. Z. S. 1859, p. 382) from Mexico and Guatemala, but larger, with a much stronger bill, and the back tinged with olivaceous. A list of the ten species (of *Dendromanes* and *Dendrocincla* proper) known to the authors is subjoined. P. L. Sclater & O. Salvin, P. Z. S. 1868, p. 54.

Dendrocincla longicauda and *D. minor* are two hitherto undescribed species obtained by Natterer. The first, met with in several localities, is allied to *D. atrirostris* (Lafr. & D'Orb.) (*cf.* Zool. Rec. i. p. 75), but is larger, and has a much longer tail and a yellow throat. The second, from Sao Vicente, resembles *D. meruloides* (Lafr.), but is smaller, and a yellow streak behind the eye distinguishes it from *D. fumigata* (Licht.). A. von Pelzeln, Orn. Bras. pp. 42, 60, 61.

Xiphocolaptes emigrans and *X. major* are figured. P. L. Sclater & O. Salvin, Ex. Orn. pls. xxxv., xxxvi.

Dendrocolaptes puncticollis is described and figured as a new species from Vera Paz, Guatemala. It resembles *D. picumnus* (Licht.) from Brazil, but has a longer, narrower, and paler-coloured bill, the neck spotted with black, and the under wing-coverts ochraceous. It is *D. puncticollis*, Scl. & Salv. (Ibis, 1860, p. 275), *nec* Eyton (Contr. Orn. 1851, p. 75), which is regarded as *D. validus*, Tschudi. Full-sized woodcuts of the head, bill, and foot are given, as well as a list of the seven species (of *Dendrocops* and *Dendrocolaptes* proper) known to the authors. P. L. Sclater & O. Salvin, P. Z. S. 1868, pp. 54–56, pl. v.

Dendrocolaptes pallescens and *D. concolor* are two hitherto undescribed species obtained by Natterer in Brazil: the first greatly resembles *D. validus* (Tsch.), but the hinder border only of the crown-feathers is dark, and some other differences distinguish it; the second, which in colour vividly resembles *Xiphocolaptes perroti* (Lafr.), seems in many points to agree with *Premnocopus undulatus*, Cab., but the markings of the head, neck, and breast are different. A. von Pelzeln, Orn. Bras. pp. 43, 61, 63.

Dendrornis elegans is a hitherto undescribed species, obtained by Natterer

in Brazil, allied to *D. spixi*, Less., and *D. ocellata* (Spix), but differing from the last in the guttate spots on the back, and from both in the triangular spots on the breast and belly. A. von Pelzeln, Orn. Bras. pp. 45, 63, 64.

Dendroplex affinis is a hitherto undescribed species, obtained by Natterer in Brazil, very like *D. picus*, but having a somewhat broader (higher) and shorter bill, with the culmen gently decurved, and the ground-colour of the lower part of the belly is grey-brown, with no ochreous tinge. A. von Pelzeln, Orn. Bras. pp. 46, 64, 65.

Picolaptes fuscicapillus is a hitherto undescribed species, procured in Brazil by Natterer, resembling *P. albolineatus* and *P. affinis*, Lafr., in form and colour, but differing in size, as well as in the whole-coloured crown and nape. A. von Pelzeln, Orn. Bras. pp. 44, 63.

Meliphagidæ.

Zosterops simplex is a new species from the Pelew Islands. G. Hartlaub, P. Z. S. 1868, p. 117.

Zosterops madagascariensis, *Z. mayottensis*, *Z. hæsitata*, *Z. mauritanica*, (lege *mauritiana*), and *Z. borbonica* figured. H. Schlegel & F. P. L. Pollen, Rech. Faun. Madag. pl. 19 (*cf.* Zool. Rec. iv. p. 93).

Tephras is a new genus of the *Zosterops*-group, but differs from that genus in the form of the bill, in its rounded tail, and weak narrow rectrices, subacuminate at the tip, in its less-pointed wing, and in the want of an eye-ring. It agrees in many points with the West-African *Parinia* and the Indian *Myzornis* and *Yuhina*, but is decidedly distinct from them. The type is

Tephras finschi from the Pelew Islands. G. Hartlaub, P. Z. S. 1868, pp. 6, 117, pl. iii.

Glycyphila subfasciata is described as a new species from Queensland. E. P. Ramsay, P. Z. S. 1868, pp. 385, 386.

Entomyza cyanotis and *E. albipennis* are figured. S. Diggles, Orn. Austral. pt. xviii.

Acanthorhynchus tenuirostris, *A. superciliosus*, and *A. picatus* are figured. *Id. op. cit.* pt. xix.

Sphenostoma cristata and *Psophodes crepitans* are figured. *Id. op. cit.* pt. xx.

Nectariniidæ.

"*Nectarinia albidula* (Morel.)" is the name given to the "Oiseau blanc" of Réunion. A. Vinson, Bull. Soc. Imp. d'Acclimat. 1868, p. 630. [Qu. *Zosterops borbonica* (Bodd.), *cf.* Ibis, 1868, p. 225.]

Nectarinia ludovicensis is described as a new species from Biballa, West Africa, allied to *N. johannæ*. J. V. Barboza du Bocage, Jorn. Sc. Lisboa, 1868, p. 41.

Cœrebidæ.

"*Dacnis angelica*, De Filippi," Bp. (Atti IV. Riun. Sc. Ital. 1844, p. 404; Consp. Av. i. p. 400), is *D. cayana* (L.). T. Salvadori, Atti Accad. Sc. Torino, 1868, pp. 260–262.

Cotingidæ.

Pachyrhamphus albescens, Gould (Zool. 'Beagle,' iii. p. 50, pl. xiv.), is referred to the genus *Elainea*. H. Burmeister, P. Z. S. 1868, pp. 634, 635.

Pachyrhamphus albinucha is described as a new species from Buenos Ayres, of the figure and size of *P. cinereus* (Bodd.), but rather smaller, the bill somewhat slender, and the wings relatively shorter. *Id. tom. cit.* p. 635.

Heteropelma stenorhynchum is described as a new species from Venezuela, belonging to the group allied to *H. turdinum*, and nearly as large as that species. Beneath it is pale on the throat like *H. wallacii* (*cf.* Zool. Rec. iv. p. 94), but has indications of transverse markings on the belly. Above it is most like *H. amazonum*, but the bill is narrower and more compressed than in the other allied species. P. L. Sclater & O. Salvin, P. Z. S. 1868, p. 632.

Ampelidæ.

Ampelis garrulus supposed to have bred in England [!!]. O. Mosley, Zool. S. S. p. 1294. Its occurrence, in April 1867, at Orange, in the State of New York. T. M. Trippe, Am. Nat. 1868, p. 380.

Hypocolius ampelinus, Bp. (Consp. Av. 1850, i. p. 336) comes, not from California, but from Abyssinia, and is identical with *Ceblepyris isabellina*, Heugl. (Sitzungsb. Ak. Wien, 1855–56, xix. p. 284)! Both sexes are described and figured. M. T. von Heuglin, Ibis, 1868, pp. 181–183, pl. 5.

Allotrius xanthochlorus, Hodgs., is certainly distinct from *A. melanotis*, Hodgs., though they are regarded as identical by Jerdon (B. Ind. ii. p. 246), and referred by him to *A. ænobarbus*, Temm. F. Stoliczka, J. A. S. B. 1868, p. 50, note. [*Cf.* Ibis, 1867, p. 30, and 1869, pp. 111, 112.]

Salvadori, Tommaso. Nota intorno al Genere *Prionochilus*, Strickland. Atti R. Accad. Sc. Torino, 1868, pp. 413–420, pl.

A careful monograph of this genus, to which belong five species, one of them,

P. xanthopygius, from Borneo, being described and figured as new. It is very like *P. percussus*, but has a yellow rump and no white malar spot.

Pardalotus affinis and other species of this genus, further notes (Zool. Record, iii. p. 00) on their plumage, distribution, and habits. E. P. Ramsay, Ibis, 1868, pp. 118, 119.

Pardalotus punctatus, notes on its mode of breeding. *Id. tom. cit.* pp. 272–275.

Pardalotus rubricatus, *P. striatus*, *P. affinis*, *P. melanocephalus*, and *P. uropygialis* are figured. S. Diggles, Orn. Austral. pt. xvi.

Eopsaltria australis, *E. griseogularis*, *E. capito*, and *E. leucogaster* are figured. S. Diggles, Orn. Austral. pt. xix.

Timaliidæ.

Garrulax vittatus, De Filippi (Mus. Mediol. p. 31), is *Timalia mitrata*, Müll. T. Salvadori, Atti Accad. Sc. Torino, 1868, p. 270.

Alcippe cinereocapilla and *A. pectoralis* are two new species, from Borneo, both resembling *A. albogularis*, but the former with a flat, muscicapine bill, much beset with bristles at the base, and the latter with the bill less stout, broad, depressed, and furnished with long bristles. T. Salvadori, Atti Accad. Sc. Torino, 1868, pp. 530, 531.

Cinclosoma cinnamomeus is figured. S. Diggles, Orn. Austral. pt. xvii.

Drymochares appears to be intended as the name of a new genus allied to

Brachypteryx, but differing greatly in its colour and markings. No other characters are assigned. The type is

B. (*D.*) *stellatus*, a new species from Nepaul, to be known from every *Brachypteryx* by the concentric wavy lines of the chest, and the chestnut back, while the "stellations" of the breast render it different from every other bird. J. Gould, P. Z. S. 1868, pp. 218, 219.

Brachypteryx macroptera is described as a probably new species from Borneo, allied to *B. pyrrhogenys*, but not having the sides of the head and neck so distinctly rufous. It also resembles *B. leucophrys*, but has not the flanks rufous. It may, however, be *Turdirostris umbratilis*, Bp., Consp. Av. i. p. 218. T. Salvadori, Atti Accad. Sc. Torino, 1868, pp. 528–530.

Pterorhinus is a new genus, with the bill approaching that of *Pomatorhinus*, curved, compressed at the culmen, and expanding at the sides, narrowing very gradually to the tip, which is obtuse and without notch; the nostrils are thickly covered with feathers and vibrissæ, more so than in *Garrulax*; the wings short and rounded, fifth, sixth, and seventh quills longest; the tail, of twelve feathers, is moderately long, and has the four outer rectrices graduated; the legs are somewhat slender for the group, more so than in *Leucodioptrum*, with moderate feet and claws. In coloration it resembles *Malacocercus*. The type is

P. davidi, a new species from Northern China. R. Swinhoe, Ibis, 1868, pp. 60, 61.

Hirundinidæ.

"*Hirundo alfredi*, Hartlaub," is the name given to specimens from South Africa formerly regarded as identical with *H. lunifrons* of North America. With its eggs, it is figured: J. H. Gurney, Ibis, 1868, pp. 152–154, pl. iv. The nest and mode of breeding described: E. L. Layard, *tom. cit.* p. 243.

Hirundo angolensis is described as a new species from Huilla, West Africa, allied to *H. rustica* and *H. cahirica*, but having a dusky ash-coloured abdomen and black under wing-coverts. J. V. Barboza du Bocage, Jorn. Sc. Lisboa, 1868, pp. 47, 48.

Cecropis [sc. *Hirundo*] *rustica*, a case of bigamy in. R. Meyer, Zool. Garten, 1868, pp. 77, 78.

Cecropis rufula, *C. daurica*, *C. erythropygia*, and *C. hyperythra* are figured. J. Gould, B. As. pt. xx.

Hirundo neoxena and *Atticora leucosternum* are figured. S. Diggles, Orn. Austral. pt. xvii.

Hypurolepis is a new generic name proposed instead of *Herse*, Less., which is preoccupied. To it will belong *Hirundo domicola*, Jerd. (which is figured), *H. frontalis*, Quoy & Gaim., and *H. subfusca*, Gould (P. Z. S. 1856, p. 137), besides, we suppose, *H. tahitica*, Gmel. J. Gould, B. As. part xx.

Delichon nipalensis and *Lagenoplastes fluvicola* are figured. *Id. loc. cit.*

Oriolidæ.

Oriolus notatus is a new species from Mozambique, resembling *O. auratus*. W. Peters, J. f. O. 1868, pp. 132, 133.

Oriolus viridis and *O. flavicinctus* are figured. S. Diggles, Orn. Austral. pt. xvi.

Tyrannidæ.

Euscarthmus impiger is described and figured as a new species from Venezuela, most nearly allied to *E. margaritaceiventer* (Lafr. & D'Orb.), but differing in its olivaceous lower back and the obscure "flammulations" below. P. L. Sclater & O. Salvin, P. Z. S. 1868, p. 171, pl. xiii. fig. 1.

Leptotriccus superciliaris is a new species from Veragua, differing from *L. sylviola* of Brazil in its somewhat larger and rather wider bill, and small but distinct superciliary streak, beginning above the lore and passing to the back of the eye. P. L. Sclater and O. Salvin, P. Z. S. 1868, p. 389.

Anæretes cristatellus, Salvad. (Zool. Record, ii. p. 107), is *Serpophaga subcristata* (Vieill.). P. L. Sclater and O. Salvin, P. Z. S. 1868, p. 175, note.

Mionectes olivaceus is a new species from Costa Rica, differing from *M. striaticollis* in wanting the dusky colouring of the forehead, crown, cheeks, and throat of that species, in having the abdomen of a clearer yellow, in being smaller, and having a longer and narrower bill. G. N. Lawrence, Ann. Lyc. N. H. New York, 1868, p. 111.

Elainea. To this genus is referred *Pachyrhamphus albescens*, Gould (Zool. 'Beagle,' iii. p. 50, pl. xix.). H. Burmeister, P. Z. S. 1868, pp. 634, 635.

Sublegatus is a new genus with the general appearance of *Elainea*, but with the nostrils turned apart, rounded, and entirely open; otherwise the bill is like that of *Legatus*, though more depressed. The gape is beset with a few small bristles. Wings somewhat short, the third, fourth, and fifth remiges equal and longest; the first nearly equal to the ninth, and the second a little longer than the sixth. Tail long and nearly even. Tarsi as in *Elainea*, but stouter. The type is

S. glaber, a new species from Venezuela. P. L. Sclater & O. Salvin, P. Z. S. 1868, pp. 171, 172, pl. xiii. fig. 2.

Rhynchocyclus cerviniventris, Salvad. (Zool. Rec. ii. p. 107), is *Contopus pallidus* (Gosse). P. L. Sclater and O. Salvin, P. Z. S. 1868, p. 175, note.

Rhynchocyclus griseimentalis is described as a new species from Costa Rica, much like *R. olivaceus* from Brazil, but more yellowish above, with the breast much darker and the middle of the abdomen brighter yellow. It has also a larger bill. The points in which it differs from *R. brevirostris* and *R. mesorhynchus* (the identity of which two species is suggested) are also pointed out. G. N. Lawrence, Ann. Lyc. N. H. New York, 1868, pp. 112, 113.

Myiobius nationi, Sclat. (Zool. Rec. iii. p. 92), is *M. rufescens*, Salvad. (Zool. Rec. ii. p. 107). P. L. Sclater & O. Salvin, P. Z. S. 1868, pp. 174, 175.

Empidochanes euleri, *E. altirostris*, and *E. argentinus* are new species. The first, of which the mode of breeding is described (C. Euler, J. f. O. 1868, p. 184) is from Cantagallo, in Brazil, and much resembles *Myiophobus nævius* (Bodd.), except that it wants the yellow crown, and in size as well as in colouring is intermediate between that species and *Muscipeta fuscata*, Max (*E. olivus*, Sclat.). The second is from Carthagena, and has the bill somewhat broad and higher, with the basal third part of the mandible only light coloured, the wings and tail longer, and the top of the head and rump somewhat more olive-coloured, the upper surface being without any reddish-brown admixture. The third is from Buenos Ayres, and is smaller, the bill flatter and shorter, the mandible whitish, the whole upper surface of a more decided

olive-colour without reddish mixture, the characteristic wing-marking narrower, lighter, and less decidedly orange, and the light superciliary streak only strongly marked as a spot in front of the eye. J. Cabanis, J. f. O. 1868, pp. 194–196.

Mitrephorus fulvifrons is figured. D. G. Elliot, B. N. Am. pt. ix.

Myiarchus erythrocercus is a new species from Venezuela, resembling *M. cooperi*, but almost as small as *M. ferox*, with shorter tarsi and much more rounded wings. It is no. 195 of Azara (Apunt. ii. p. 143), and has been variously assigned by other authors to *Tyrannus crinitus*, *T. irritabilis*, and *M. ferox*. P. L. Sclater & O. Salvin, P. Z. S. 1868, pp. 631, 632.

Dicruridæ*.

"*Dicrurus himalayanus*" [cujus ?] is said to be a common species between Simla and Mussoorie: R. C. Tytler, Ibis, 1868, p. 200. Referred to *D. longicaudatus*, A. Hay: E. Blyth, *tom. cit.* p. 355. Described as a new species,

Buchanga waldeni, from specimens procured near Simla. R. C. Beavan, *tom. cit.* pp. 496, 497.

Dicrurus fugax is a new species from Mozambique, nearly allied to *D. lugubris*, Ehrenb., but with a weaker bill. It differs from *D. ludwigi*, A. Smith, through its more considerable size. W. Peters, J. f. O. 1868, p. 132.

Laniidæ.

Lanius excubitor, observations on the habits of an individual of this species, K. Müller, J. f. O. 1868, pp. 178–182. Figured, as also *L. minor* (Zool. Record, iv. p. 98). J. Gould, B. Gr. Br. pt. xiii.

Lanius cephalomelas, Bp. (R. Z. 1853, p. 436), is *L. nasutus*, Scop. (F. & F. Insub. 1786, ii. p. 85), and *L. antiguanus*, Gmel. (S. N. 1788, i. p. 301), besides being possibly identical with *L. nigriceps*, Frankl. (P. Z. S. 1831, p. 117). Ld. Walden, Ibis, 1868, pp. 70, 71.

Lanius jeracopis, De Filippi (Mus. Mediol. p. 31) (Bp. R. Z. 1853, p. 437), is *L. lucionensis*, L. T. Salvadori, Atti Acc. Sc. Torino, 1868, pp. 272, 273.

"*Lanius dealbatus*, De Filippi," Bp. (R. Z. 1853, p. 289), is certainly not *L. pallidirostris*, Cass. (Proc. Acad. Philad. 1851, p. 244), but is perhaps *L. pallens*, Cass. (*loc. cit.*); on the other hand, *L. dealbatus*, Bp. (R. Z. 1853, p. 294) (*nec* De Fil.), and probably *L. pallidus* (Zool. Record, i. p. 78, iv. p. 98), are to be referred to *L. pallidirostris*. *Id. tom. cit.* pp. 277–279.

Collurio [sc. *Lanius*] *ludovicianus*, remarks on its impaling its prey. E. Coues, Proc. Boston Soc. N. H. xii. pp. 112, 113. [*Cf.* Ibis, 1869, pp. 118–120.]

Vanga polleni is a new species from Madagascar, belonging to the group *Xenopirostris*, Bp., and descriptions of this and the other three species of the genus, as recognized by the author, are given. H. Schlegel, Rech. Faun. Madag. pp. 173, 174.

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* We have to thank Dr. Hartlaub (Bericht u. s. w. p. 160) for pointing out a mistake which occurred in our last Record. The name "Edoliidæ" (Zool. Record, iv. p. 96) should have been omitted, and the paragraph by which it is followed transferred to the opposite page, under "Dicruridæ."

Rectes tenebrosus is described from a young bird as a new species from the Pelew Islands. G. Hartlaub & O. Finsch, P. Z. S. 1868, p. 6.

Artamus leucorhynchus (Gmel.) and *A. leucogaster* (Valenc.) are both found in Luzon, and the former also in the Pelew Islands. G. Hartlaub and O. Finsch, P. Z. S. 1868, pp. 116, 117.

Campephagidæ.

Ceblepyris isabellina, Heuglin (Sitzungsb. Ak. Wien, 1855–56, xix. p. 284), is identical with *Hypocolius ampelinus*, Bp. (Consp. Av. 1850, i. p. 336)! M. T. von Heuglin, Ibis, 1868, pp. 181–183, pl. 5.

Ceblepyris luctuosus, De Filippi (Mus. Mediol. p. 31), is the male of *Pericrocotus cinereus*, Lafr. (R. Z. 1845, p. 94), and the latter name has priority. T. Salvadori, Atti Accad. Sc. Torino, 1868, p. 271.

Oriolia (*Artamia*) *bernieri*, Is. Geoffr. (Zool. Record, iv. p. 98), is the young of *Artamia leucocephala* (L.). A. Grandidier, R. Z. 1868, p. 48 (*cf.* Zool. Record, iv. p. 99).

Artamia (sc. *Cyanolanius*) *bicolor*, a beautiful series of figures, showing its different phases of plumage, is given. H. Schlegel & F. P. L. Pollen, Rech. Faun. Madag. pl. 24.

Artamia viridis is figured. *Iid. op. cit.* pl. 27.

Volvocivora borneensis is a new species, from Borneo, very like *V. fimbriata*, but smaller. It has been taken for that species by Sclater (P. Z. S. 1863, p. 218) and Hartlaub, *partim* (J. f. O. 1865, p. 161). T. Salvadori, Atti Accad. Sc. Torino, 1868, pp. 532, 533.

Muscicapidæ.

Cyornis beccariana is a new species, from Borneo, differing from *C. banyumas* in not having the black lores and chin, but light rufous, and in having a larger and comparatively narrower bill. It cannot be confounded with *C. rufifrons* (Zool. Record, ii. p. 110), as that has a rufous forehead and a bluish-black chin. T. Salvadori, Atti Accad. Sc. Torino, 1868, p. 533.

Ophryzone is a new genus proposed for the reception of *Arses kaupi*, its chief character being the enlargement of the eyelid into a narrow flat rim, crenulated [*qu.* crenellated?] on its outer margin. E. P. Ramsay, P. Z. S. 1868, pp. 383, 384.

Myiagra latirostris, *Machærorhynchus flaviventer*, *Piezorhynchus nitidus*, and *Seisura inquieta* are figured. S. Diggles, Orn. Austral. pt. xx.

Muscipeta mutata (Zool. Record, ii. p. 110, *sub nom.* Tchitrea mutata et all.), a beautiful series of five figures, showing its various phases of plumage, is given. H. Schlegel & F. P. L. Pollen, Rech. Faun. Madag. pls. 20, 21.

Muscipeta borbonica (♂ & ♀) is figured. *Iid. op. cit.* pl. 22.

Lanius (!) [sc. *Calicalicus*] *madagascariensis* is figured. *Iid. op. cit.* pl. 27.

Rhipidura lepida is a new species from the Pelew Islands, allied to *R. torrida*, Wallace (Zool. Record, ii. p. 110), but certainly different. G. Hartlaub & O. Finsch, P. Z. S. 1868, pp. 6, 117.

Hyloterpe rodolphi is described as a new species from Cochin China. J. Verreaux, Ann. Sc. Nat. 5e sér. x. p. 67.

Myiagra erythrops is a fine new typical species from the Pelew Islands. G. Hartlaub & O. Finsch, P. Z. S. 1868, pp. 6, 7, 117.

Mniotiltidæ.

Trippe, T. Martin. Our Warblers. Am. Nat. 1868, pp. 169–183.

Notes on the habits of some of the North-American species, chiefly of this family.

Helminthophaga luciæ is figured. D. G. Elliot, B. N. Am. pt. xi.

Basileuterus griseiceps is a new species from Venezuela, belonging to the same group as *B. mesochrysus* (*cf.* P. Z. S. 1865 *, p. 284), but at once distinguishable by its grey head. P. L. Sclater & O. Salvin, P. Z. S. 1868, p. 170.

Basileuterus melanotis is a new species, from Costa Rica, differing from all the allied species in the decided black colouring behind the eye, in the supra-ocular stripe being of a clear ash-colour without tinge of yellow or green, and in its paler plumage beneath. G. N. Lawrence, Ann. Lyc. N. H. New York, 1868, pp. 95, 96.

Cinclidæ.

Hydrobata ——, a supposed new species, which might be the young of *H. cashmiriensis*, but it is too small, is described from Rotegurh on the Sutlej, but left unnamed. F. Stoliczka, J. A. S. B. 1868, p. 33. [*Cf.* Ibis, 1869, p. 212.] The genus *Hydrobata* [sc. *Cinclus*] referred to the neighbourhood of the *Motacillidæ* rather than that of the *Turdidæ*. *Id. loc. cit. et* p. 48.

Turdidæ.

Turdus ruficollis, *T. fuscatus*, and *T. naumanni*: notes on these species. The entire want of any red on the wings, breast, or middle rectrices distinguishes the first from the other two. Critical remarks on the figures given by Naumann, Von Middendorff, and Radde, with a comparative table of dimensions of specimens of all three, are appended. E. von Homeyer, J. f. O. 1868, pp. 170–179. [*Cf.* Ibis, 1863, pp. 195–198.]

Turdus pelios occurs in Dauria. B. Dybowski and A. Parrex, J. f. O. 1868, p. 333. [Qu. *T. pelios*, Hartl. Orn. Westafr. p. 75 ?]

Turdus pilaris breeding in Bavaria. A. J. Jäckel, Zool. Garten, 1868, pp. 374, 375.

Turdus nanus said to have occurred in Massachusetts: E. A. Samuels, Am. Nat. 1868, p. 218. In New Jersey, T. M. Trippe, *tom. cit.* p. 380. The first referred to *T. swainsoni* and the last probably to *T. pallasi* J. A. Allen, *tom. cit.* pp. 488, 489†; E. Coues, Proc. Essex Inst. v. p. 64.

Turdus nævius has occurred near Boston, Mass. *Id. loc. cit.*

Melanotis hypoleucus is figured. P. L. Sclater and O. Salvin, Ex. Orn. pl. xliii.

Harporhynchus cinereus is figured. D. G. Elliot, B. N. Am. pt. x.

Oreocincla lunulata is figured. S. Diggles, Orn. Austral. pt. xvii.

Chætops aurantius is described as a new species from the Cape Colony. E. L. Layard, B. S. Afr. (1867) p. 126. Not recognized as distinct from *C. frenatus*. G. Hartlaub, Bericht u. s. w. p. 193.

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* Not "1866," as stated by the authors.

† This author herein refers to a paper by him, which we have not seen, as in course of publication in the Memoirs of the Boston Society of Natural History (i. pp. 508 *et seqq.*).

Crateropus hartlaubi is described as a new species from Huilla. J. V. Barboza du Bocage, Jorn. Sc. Lisboa, 1868, p. 48.

Andropadus oleaginus is described as a new species from Mozambique. W. Peters, J. f. O. 1868, p. 133.

Copsychus pica (♂, ♀, & juv.) is figured. H. Schlegel & F. P. L. Pollen, Rech. Faun. Madag. pl. 29.

Pericrocotus cinereus, Lafr. (R. Z. 1845, p. 91), is the female of *Ceblepyris luctuosus*, De Fil. (Mus. Mediol. p. 31), but the former name has priority; and to this species also should perhaps be referred *P. modestus*, Strickl. (Ann. & Mag. N. H. xix. p. 131), as well as "*P. modesta* (Boie)," Bp. (Consp. Av. i. p. 357). T. Salvadori, Atti Accad. Sc. Torino, 1868, p. 271.

Sylviidæ.

Saxicola capistrata (Zool. Rec. ii. p. 113) is the young male of *S. picata*, Blyth. Notes on *S. atrogularis*, *S. œnanthe* (ex India), and *S. leucoroides* are added. A. Hume, Ibis, 1868, pp. 233–235.

Saxicola œnanthe is figured. J. Gould, B. Gr. Br. pt. xiv.

Pratincola indica, Blyth, is identical with *P. rubicola* (L.). A. von Pelzeln, J. f. O. 1868, p. 27; Ibis, 1868, p. 309.

Pratincola rubetra preyed upon by *Lacerta agilis*. F. Schwaltzer, J. f. O. 1868, pp. 66, 67.

Callene albiventris (Zool. Rec. iv. p. 102) is figured. J. Gould, B. As. pt. xx.

Accentor alpinus and *A. modularis* are figured. J. Gould, B. Gr. Br. pt. xiii.

Cichladusa arquata (Zool. Rec. i. p. 80, ii. p. 113) and *C. guttata*, Heugl., are fully described and figured. M. T. von Heuglin, Ibis, 1868, pp. 280–282, pl. ix.

Acrocephalus stentorius (Hempr. & Ehrenb.) is not so "unknown" a species as was thought by Mr. S. S. Allen (Zool. Rec. i. p. 80), as it was many years ago recognized by Dr. Cabanis (J. f. O. 1854, p. 445) and Bonaparte (R. Z. 1855, p. 75). Its nest and eggs are described and figured from examples taken by Dr. von Heuglin. J. Cabanis, J. f. O. 1868, pp. 135–137, Taf. ii. figs. 1, 2.

Calamodyta newtoni is figured. H. Schlegel & F. P. L. Pollen, Rech. Faun. Madag. pl. 28.

Calamodyta doriæ is described as a new species, from Borneo, greatly resembling *C. aquatica*, but much larger, with the bill and legs smaller and less stout, the tail differently coloured and no median line on the crown. T. Salvadori, Atti Accad. Sc. Torino, 1868, pp. 531, 532.

Psamathia is a new genus of the *Calamoherpe*-group. The feet are the same as in *Calamoherpe*, but the bill is weaker and more slender, and the wings are very different (resembling apparently those of *Arundinax*), having the fourth instead of the third quill longest, and the second and third, instead of the second and sixth, nearly equal. The tail has only ten rectrices, instead of twelve as in *Calamoherpe* or *Tatare*. The type is

Psamathia annæ, a new species from the Pelew Islands. G. Hartlaub & O. Finsch, P. Z. S. 1868, pp. 5, 116, pl. ii.

Salicaria italica, De Filippi (Mus. Mediol. p. 30), is the true *Motacilla hypolais* of Linnæus, and is distinct from *S. hypolais*, De Fil., which is *Sylvia polyglotta*, Vieill. T. Salvadori, Atti Accad. Sc. Torino, 1868, p. 268.

Acanthiza inornata, *A. lincata*, *A. pyrrhopygia*, *A. chrysorrhea*, *A. reguloides*, and *A. diemensis* are figured. S. Diggles, Orn. Austral. pt. xvii.

Sylvia doriæ (Zool. Rec. ii. p. 114) is *S. delicatula*, Hartl. (Ibis, 1859, p. 340, pl. x. fig. 1). T. Salvadori, Atti Accad. Sc. Torino, 1868, pp. 290, 291.

S. cinerea, var. *persica* (Zool. Rec. ii. p. 115) is *Curruca affinis*, Blyth, J. A. S. B. xiv. p. 564, note. *Id. tom. cit.* p. 291.

Cisticola schœnicola, notes on its breeding in India (*cf.* Zool. Rec. ii. p. 91), W. E. Brooks, Ibis, 1868, pp. 130, 131.

Drymœca (?) *pekinensis* is a new species, from Northern China, apparently very like *Suya*, but having *twelve* instead of *ten* rectrices: R. Swinhoe, Ibis, 1868, pp. 61, 62. Referred to the genus *Amytis*: J. P. Verreaux, *tom. cit.* p. 499.

Drymœca bivittata is described as a new species, from Mozambique, allied to *D. affinis*, A. Smith, but easily distinguishable by the white supraorbital streaks extending from the bill, and the want of the white tip to the tail. W. Peters, J. f. O. 1868, pp. 131, 132.

Drymœca ellisia [sc. *Ellisia madagascariensis* (Lath.), *E. typica*, Hartl.] is figured. H. Schlegel & F. P. L. Pollen, Rech. Faun. Madag. pl. 28.

Drymœca anchietæ is described as a new species, from Biballa, West Africa, allied to *D. fortirostris*, *D. robusta*, *D. erythrogenys*, and *D. nævia*. J. V. Barboza du Bocage, Jorn. Sc. Lisboa, 1868, p. 41.

Drymoipus verreauxi is a supposed new species, from Dacca, which Dr. Jerdon thinks may probably be identical with *Graminicola bengalensis* (B. Ind. ii. p. 177).

Cisticola isodactyla and *C. procera* are described as new species from Mozambique, the former allied to *C. levaillanti*, A. Smith, but without spots on the head and having the inner toe not longer than the outer. W. Peters, J. f. O. 1868, p. 132.

Phylloscopus ——, a supposed new species, from Nachar, in the North-west Himalaya, in general colour resembling *P. rama*, but decidedly smaller, is described, but left unnamed. F. Stoliczka, J. A. S. B. 1868, p. 46. [*Cf.* Ibis, 1869, p. 211.]

"*Regulus himalayensis*, Blyth" [*ubi*?], is identical with *R. cristatus* (L.) A. von Pelzeln, J. f. O. 1868, p. 26; Ibis, 1868, p. 308.

Motacillidæ.

Anthus spinoletta, its occurrence in Devonshire. J. Gatcombe, Zool. S. S. p. 1254. Confounded with *A. petrosus*, E. Newman, *tom. cit.* p. 1255.

Anthus ricardi, its occurrence in Kent. C. Gordon, *tom. cit.* p. 1458. At Scilly, E. H. Rodd, *loc. cit.* In Sussex, G. D. Rowley, *tom. cit.* p. 1478.

Anthus rufescens, its occurrence at Scilly. E. H. Rodd, *tom. cit.* p. 1458.

Calobates sulphurea (in summer and winter) is figured (2 pls.). J. Gould, B. Gr. Br. pt. xiii.

Budytes rayi and *B. flava* are figured. *Id. op. cit.* pt. xiv.

Troglodytidæ.

"*Campylorhynchus pallidus*, Burm.," is described as a new species from Bolivia. C. Giebel, Zeitschr. gesammt. Naturwissensch. 1868, pp. 13, 14.

Odontorhynchus is a new genus, allied to *Campylorhynchus* and *Helcodytes*,

but differing from both in the strong tooth at the tip of the bill and the strong curvature of the maxilla. The cross-bandings of the tail call to mind the more normal *Troglodytinæ*. The type is

O. cinereus, a hitherto undescribed species obtained by Natterer in Brazil. A. von Pelzeln, Orn. Bras. pp. 48, 67, 68.

Cyphorhinus (*Microcerculus*) *cinctus* is a hitherto undescribed species obtained by Natterer in Brazil. A. von Pelzeln, Orn. Bras. pp. 47, 65, 66.

Thryothorus minor is a hitherto undescribed species obtained by Natterer on the Rio Guaporé, resembling *T. leucotis*, Lafr., but smaller, greyish olive-brown above with very little reddish tinge, and beneath rust-yellow, except the white middle of the breast. *Troglodytes audax*, Tsch., also comes near it, but differs in its barred back. A. von Pelzeln, Orn. Bras. pp. 47, 66, 67.

Certhiidæ.

Certhia familiaris is figured. J. Gould, B. Gr. Br. pt. xiii.

Salpornis spilonota is figured. *Id.* B. As. pt. xx.

Sittidæ.

Sitta cæsia, its supposed occurrence in Ireland, where it has not hitherto been known. Ld. Clifton, Zool. S. S. p. 1134.

Paridæ.

Parus commixtus is the name proposed for the common form of Titmouse from the Tingchow Mountains, north-east of Amoy, which partakes of the appearance of *P. cinereus* from Malacca and *P. minor* from Japan. R. Swinhoe, Ibis, 1868, pp. 63, 64.

Parus atricapillus, its habits. A Fowler, Am. Nat. 1868, pp. 584–587.

Parus montanus is figured. G. D. Elliot, B. N. Am. pt. ix.

"*Parus pekinensis*, A. David," is described as a new species from Northern China. J. Verreaux, Ann. Sc. Nat. 5e. sér. x. p. 67.

Melaniparus semilarvatus (Zool. Rec. iii. p. 97), its description translated into German. E. von Martens, J. f. O. 1868, p. 68.

Melanochlora sultanea is figured. J. Gould, B. As. pt. xx.

Ægithaliscus anophrys is described as a new species from the Tingchow Mountains, north-east of Amoy: R. Swinhoe, Ibis, 1868, pp. 64, 65. Identical with *Psaltria concinna*, Gould (B. As. part vii. 1855), from Chusan: J. Gould, *tom. cit.* p. 250.

Sharpe, R. B. On the genus *Acredula*. Ibis, 1868, pp. 295–302.

A very good monograph. Six species are differentiated, of which the author has seen all but one. *Parus caudatus*, auctt. Britt., is separated from *P. caudatus*, L., under the name of *A. rosea* (Blyth, White's N. H. Selb. 1836, p. 111, note), and no doubt with as much justice as many other 'species' have been. The synonymy and diagnoses are carefully treated.

Tanagridæ.

Chlorophonia frontalis, *C. longipennis*, and *C. occipitalis* are figured. P. L. Sclater & O. Salvin, Ex. Orn. pls. xli. & xlii.

Calliste sclateri, Cabanis (Zool. Rec. iii. p. 98, *nec* Lafresnaye, R. Z. 1854,

p. 207), is figured and renamed *C. cabanisi*. P. L. Sclater, Ibis, 1868, pp. 71, 72, pl. iii.

Pyranga testacea is a new species from Veragua, very like *P. hepatica*, but much smaller and of a deeper colour. P. L. Sclater & O. Salvin, P. Z. S. 1868, pp. 388, 389.

Pyranga æstiva [?] has occurred for the first time in Trinidad. H. Kelsall, Proc. Sc. Ass. Trinidad, 1868, pp. 208, 209.

Phœnicothraupis carmioli is a new species, from Costa Rica, which (if the specimens be rightly marked males) has a very abnormal coloration, the head and back being of a uniform clear green, and no indication of a crown-spot; beneath it is yellowish, without any tinge of fulvous-brown. G. N. Lawrence, Ann. Lyc. N. H. New York, 1868, p. 100.

Tachyphonus phœniceus and *T. delattrii* are figured. P. L. Sclater & O. Salvin, Ex. Orn. pls. xxxiii., xxxiv.

Chlorospingus hydrophœus is a new species from Veragua, resembling *C. flavigularis*, but smaller, dusky beneath, and with the middle of the throat white. P. L. Sclater and O. Salvin, P. Z. S. 1868, p. 389.

Xenospingus (Zool. Rec. iv. p. 100) is referred to *Fringillidæ*. *Id. tom. cit.* pp. 173, 174.

Ploceidæ.

Hyphantornis mariquensis (A. Smith, Zool. S. Afr. ii. pl. 103) ♂ *vest. nupt.* is figured. J. H. Gurney, Ibis, 1868, p. 466, pl. x.

Hyphantornis olivaceus (Hahn, Vög. As. Lief. 6, fig. 4), its intricate synonymy, according to Dr. Hartlaub's views, is given. *Id. tom. cit.* pp. 161, 162.

Hyphantornis auricapillus (Swains.) is only a small race of *H. capitalis* (Lath.). Small races also of *H. capensis* (Smith), *Ploceus capensis* (L.), *P. oryx* (L.), and *Estrelda astrild* (L.) also occur in the Cape Colony. E. L. Layard, Ibis, 1868, pp. 246, 247.

Hyphantornis cabanisi is described as a new species, from Mozambique, allied to *H. capitalis*, but smaller. W. Peters, J. f. O. 1868, p. 133. [Qu. = *H. auricapillus* ut suprà?]

Hyphantornis æthiops (Zool. Rec. iv. p. 107) is *H. velata* (Vieill. Encl. Méth. p. 701). O. Finsch, *tom. cit.* pp. 166, 167.

Hyphantornis axillaris, Heugl. (J. f. O. 1867, pp. 381–383), is no doubt *H. badia*, Cassin (Proc. Ac. N. Sc. Philad. 1850, p. 57). *Id. tom. cit.* pp. 167, 168.

"*Hyphantornis vitellina* (Licht.)," Heugl. (J. f. O. 1867, pp. 384, 385), *H. erythrophthalma*, Heugl. (*tom. cit.* pp. 386, 387), and *H.* (*Textor*) *atrogularis* (Zool. Rec. i. p. 84) are respectively identical with *Xanthophilus sulfureus*, Reichenb. (Singvög. p. 84, fig. 313), *H.* (*Ploceus*) *mariquensis* (*ut suprà*), and *H.* (*Ploceus*) *tæniopterus*, Reichenb. (Singvög. p. 78, figg. 281, 282). *Id. tom. cit.* pp. 168, 169.

Hyphantornis aurifrons (Temm.) and *H. concolor* (Zool. Rec. iv. p. 107) are respectively synonymous with *Icterus olivaceus*, Hahn (Vög. As. Afr. u. s. w., 1822, vi. Taf. 4), and "*H. aurea*, Natt.," Hartl. (J. f. O. 1860, p. 180). *Id. tom. cit.* p. 169.

Obs. Several other identifications of species of this genus are also made by Dr. Finsch in the careful paper just cited.

Philagrus pectoralis is described as a new species, from Mozambique, in size and appearance allied to *Plocepasser melanorhynchus*, but having the

region behind the eye and round the ear ferruginous, and the breast spotted with dusky. W. Peters, *tom. cit.* p. 133.

Ploceus, *Vidua*, and *Amadina*, a list of the species of these genera, in a comprehensive sense, which are commonly kept as cage-birds, is given. F. Schlegel, Zool. Garten, 1868, pp. 257-269, 289-292, 321-328, 353-360, 389-397.

Estrelda paludicola ♀ and *E. rhodopsis* ♂, Heugl. (J. f. O. 1863, p. 166), are figured. The last is placed in a subgenus, *Rhodopyga*, of which the characters given are, tail somewhat graduated and short, upper tail-coverts red. M. T. von Heuglin, J. f. O, 1868, pp. 9, 13, Taf. i. figs. 2, 3.

Sporæginthus miniatus, Heugl. (J. f. O. 1863, p. 167), is *Amadina sanguinolenta*, Lefèbvre (Voy. Abyss. Ois. p. 174), and, being regarded as the eastern form of *Estrelda subflava* (Vieill. N. Dict. H. N. xxx. p. 575), is now called *E. subflava orientalis*. *Id. tom. cit.* pp. 11–13.

Habropyga rara, Antin. (Zool. Rec. i. p. 84), is figured and referred to *H. hypomelas*, Heugl. (J. f. O. 1864, p. 252), with which also *Estrelda melanogaster*, Heugl. (*op. cit.* 1863, p. 273) (*nec* Swains.), is identical. *Id. tom. cit.* pp. 13, 14, Taf. i. fig. 4. [So far as we can judge, Dr. Antinori's name has priority of publication.]

Estrelda rhodopareia appears to be described as a new species from the Bogos country, but it may possibly be *Fringilla senegala*, Linn. *Id. tom. cit.* p. 16.

Lagonosticta nigricollis is figured. *Id. tom. cit.* Taf. i. fig. 1.

Lagonosticta minima, notes on its breeding and the nestling-plumage. K. Russ, *tom. cit.* pp. 328, 329.

"*Estrelda carmelita*, Hartlaub," from Natal, is described as a new species. J. H. Gurney, Ibis, 1868, pp. 46, 47.

Estrelda quartinia, Bp. (Consp. Av. i. p. 461). Two specimens, referred with doubt to this species, originally described as from Abyssinia, obtained in West Africa. J. V. Barboza du Bocage, Jorn. Sc. Lisboa, 1868, p. 44.

Estrelda bella, *E. oculea*, *E. annulosa*, *E. bichenovi*, and *E. modesta* are figured. S. Diggles, Orn. Austral. pt. xviii.

Munia similaris is described as a new species, from the lower ranges of the North-west Himalaya, like *M. malabarica*, but distinctly more rufescent, and proportionally longer claws, besides being perhaps a trifle larger. F. Stoliczka, J. A. S. B. 1868, pp. 56, 57. [Identified with *M. undulata* (Lath.). Id. Walden, Ibis, 1869, p. 211.]

Donacola castaneothorax, its habits, nest, eggs, and young described. E. P. Ramsay, Ibis, 1868, pp. 231–233.

Fringillidæ.

Pheucticus tibialis (Zool. Rec. iv. p. 107) is figured. T. Salvadori, Atti Accad. Sc. Torino, 1868, pp. 177, 178, pl.

Cardinalis plumbeus, *Pyrgisoma leucote*, and *P. rubricatum* are figured, P. L. Sclater & O. Salvin, Ex. Orn. pls. lxiii., lxiv.

Xenospingus (*cf.* Zool. Rec. iv. p. 106) is considered to be a Fringilline form allied to *Phrygilus*. Woodcuts of the head and wing of *X. concolor* and diagnoses of its sexes are given. *Id.* P. Z. S. 1868, pp. 173, 174.

Zonotrichia quinquestriata is a new species from Mexico, differing in some respects from other members of the genus: for instance, the wings are short and much rounded; the third, fourth, and fifth primaries are equal and longest; the second only slightly shorter, the first ·35 inch shorter than the longest, and longer than in normal *Zonotrichiæ*; the tail is short and slightly rounded, with no markings on the outer rectrices. It has five white lines originating from the bill, and therein somewhat resembles *Z. mystacalis*, from which it is to be distinguished by the bright reddish-brown rump and stripes on the head and interscapulars. *Iid. tom. cit.* pp. 323, 324.

Peucæa notosticta is a new species from Southern Mexico, resembling *P. boucardi*, but with the sides of the crown reddish-brown streaked with black, and the upper part of the back with black stripes. A list of the five species known to the authors is added. *Iid. tom. cit.* pp. 322, 323.

Fringillauda sordida is a new species from the Baralatse Pass and near Padam, in the North-west Himalaya. F. Stoliczka, J. A. S. B. 1868, p. 63, [*Cf.* Ibis, 1869, p. 211.]

Pyrgisoma cabanisi and *P. kieneri* are carefully differentiated. The first is from Costa Rica, and resembles *P. biarcuatum*, having the side of the head chestnut, and a black pectoral spot. The second is from Western Mexico (?), and resembles *P. rubricatum*, but has a thicker bill, stouter feet, and is more brownish above. A list of the five species of the genus known to the authors is added. P. L. Sclater and O. Salvin, P. Z. S. 1868, pp. 324–326.

Spermophaga niveoguttata is a new species from Mozambique, very nearly resembling *S. margaritata*, Strickl.; but that has rose-coloured spots on the belly, while in the present they are snow-white. W. Peters, J. f. O. 1868, p. 133.

Petronia brachydactyla, Bp. (Consp. Av. i. p. 513) is figured and its habits and eggs are described: H. B. Tristram, Ibis, 1868, pp. 205, 206, pl. vi. Occurs also in the Abyssinian coast-district: M. T. von Heuglin, J. f. O. 1868, pp. 79, 80.

Passer rufipectus, Bp. (Consp. Av. i. p. 509) is either *P. salicarius* or *P. italicus*; and *P. rueppelli*, Bp. (*tom. cit.* p. 510), is probably *Ploceus superciliosus*, Rüpp. M. T. von Heuglin, J. f. O. 1868, p. 85.

Passer domesticus, its acclimatization in North America: T. M. Brewer, Am. Nat. 1868, p. 223. Figured as an American naturalized citizen: D. G. Elliot, B. N. Am. pt. xii.

Passer salicarius, notes on its occurrence in India. A. Hume, Ibis, 1868, pp. 240, 241.

Fringilla (*Citrinella*) *melanops* is described as a new species from near Gondar, nearly allied to *Serinus citrinelloides*, Rüpp. (Neue Wirbelth. Taf. 34. fig. 1), but differing in the absence of the blackish streaks on the breast, the circumscribed black face, the blackish striolations on the upper tail-coverts, and the somewhat longer tail. M. T. von Heuglin, J. f. O. 1868, pp. 92, 93.

Fringilla canaria, its various domesticated breeds. C. Darwin, Anim. and Pl. under Domestic. i. p. 295.

Serinus canarius, a note on a talking example. W. Lühder, J. f. O. 1868, pp. 214, 215, 284, 285.

Fringilla serinus, on the history of its extension in South Germany.

— Jäckel, Zool. Garten, 1868, pp. 405–408. [*Cf.* Zool. Rec. iv. p. 109, *sub nom.* Serini luteoli.]

Serinus aurifrons (Zool. Rec. i. p. 85), male and female figured. H. B. Tristram, Ibis, 1868, pp. 207, 208, pl. vii.

Serinus flavifrons (Zool. Rec. iv. p. 109) is now said to be identical with *Crithagra chrysopyga*, Swains. (B. W. Afr. i. p. 274), and also with *S. aurifrons*, Heugl. (Sitzungsb. k. Ak. Wien, 1856, p. 293, *descr. null.*), *nec* Tristram *ut suprà*. M. T. von Heuglin, J. f. O. 1868, pp. 95, 96.

Crithagra chrysopyga, Antin. (Cat. Ucc. Affr. p. 75) (*nec* Swains. *ut suprà cit.*), is *C. barbata*, Heugl. (Zool. Rec. i. p. 84, *nec ut cit.* J. f. O. 1863, p. 284), and is referred to the genus *Serinus*. *Id. tom. cit.* pp. 96, 97.

Crithagra crassirostris and *C. mossambicana* are described as new species from Mozambique, allied to *C. chrysopyga*; but the former is larger, with the outer part of the tip of the lateral rectrices paler, while the latter has the remiges not paler at the tip, the tail with a white-coloured margin, the inner part of the tip of the lateral rectrices being paler. W. Peters, J. f. O. 1868, pp. 133, 134.

Fringilla chloris, breeding in the hole of a pollard willow. A. von Homeyer, J. f. O. 1868, p. 285.

Hesperiphona affinis is figured. J. Gould, B. As. pt. xx.

Leucosticte gigliolii is a new species from Dauria, resembling *L. arctoa* in the red frontal feathers (which serve to distinguish it from *L. griseinucha*, *L. tephrocotis*, *L. brandti*, and *L. brunneinucha*), but differing from it in not having the remiges, rectrices, and tail-coverts white mixed with grey. T. Salvadori, P. Z. S. 1868, pp. 579, 580, pl. xliv.

Leucosticte griseonucha is figured. D. G. Elliot, B. N. Am. pt. x.

Linota cannabina is figured. J. Gould, B. Gr. Br. pt. xiv.

Linota pygmæa is a new species from Ladak and Bissahir, considerably smaller than *Metoporeia pusilla*. F. Stoliczka, J. A. S. B. 1868, p. 62. [*Cf.* Ibis, 1869, p. 211.]

Ægiothus fuscescens is figured. D. G. Elliot, B. N. Am. pt. xi.

Chrysomitris lawrencii is figured. D. G. Elliot, B. N. Am. pt. x.

Loxia bifasciata has occurred in the county Dublin. H. Blake-Knox, Zool. Sec. Ser. p. 1376.

Emberizidæ.

Emberiza pityornis has occurred at Revel. Baron von Huene, J. f. O. 1868, p. 141.

"*Emberiza quinquelineata*, A. David," is described as a new species from Northern China. J. Verreaux, Ann. Sc. Nat. 5e sér. x. p. 67.

"*Emberiza himalayensis*" [cujus?] is said to be a common species between Simla and Mussoorie: R. C. Tytler, Ibis, 1868, p. 201. Referred to *E. pityornis*, Pall.: E. Blyth, *tom. cit.* p. 355.

Plectrophanes nivalis is figured. J. Gould, B. Gr. Br. pt. xiii.

Alaudidæ.

Melanocorypha rufescens, C. L. Brehm (Naumannia, 1856, p. 375) and Blasius (*tom. cit.* p. 469), is *M. alboterminata*, Cab. (Mus. Hein. i. p. 124). M. T. von Heuglin, J. f. O. 1868, pp. 221, 222.

Melanocorypha infuscata (Zool. Rec. i. p. 85) is *Alauda erythropyga*, Strickl. (P. Z. S. 1850, p. 219, *Aves*, pl. xxi.). *Id. tom. cit.* pp. 222, 223.

Alauda præstigiatrix, Heugl. (Sitzungsb. k. Akad. Wissensch. Wien, 1856, p. 295), is *Mirafra cordofanica*, Strickl. (P. Z. S. 1850, p. 218, *Aves*, pl. xxiii.). *Id. tom. cit.* pp. 227, 228.

Geocoraphus [Cab. 1851 = *Mirafra*, Horsf. 1840] *elegantissimus* is described as a new species, but probably identical with *Megalophonus rufocinnamomeus* (Zool. Rec. iii. p. 100). *Id. tom. cit.* pp. 228, 229.

Megalophonus rufocinnamomeus (*ut suprà cit.*), its description translated into German. E. von Martens, J. f. O. 1868, p. 68.

Pyrrhulauda modesta (Zool. Rec. ii. p. 120) seems to be the female of *P. nigriceps*, Gould (Zool. 'Beagle,' *Aves*, p. 87); and this last is distinct from "*P. frontalis*, Licht," Bp. (Consp. Av. i. p. 512), which appears to be identical with *P. crucigera*, Heugl. (Sitzungsb. k. Akad. Wissensch. Wien, 1856, p. 29), *nec* Temm., *nec* Rüpp. M. T. von Heuglin, J. f. O. 1868, pp. 218, 219; J. Cabanis, *tom. cit.* p. 219, note.

Coraphites melanauchen, Cab. (Mus. Hein. i. p. 124), is *Pyrrhulauda crucigera*, Rüpp. (Syst. Uebers. p. 79). M. T. von Heuglin, *tom. cit.* pp. 219, 220.

Certhilauda doriæ is described as a new species, being the Asiatic form of *C. desertorum*, than which it is somewhat smaller, and has a wider dark band on the secondaries. T. Salvadori, Atti Accad. Sc. Torino, 1868, pp. 291, 292.

Icteridæ.

Molothrus pecoris, the foster-parents chosen for its young. T. H. Jackson, Am. Nat. 1868, p. 490.

Agelæus phœniceus with a bright orange crescent-shaped mark on the breast. W. Brewster, Am. Nat. 1868, pp. 217, 218.

Sturnidæ.

Sturnus purpurascens is described as a new species, from Erzeroum, larger than either *S. vulgaris* or *S. indicus*, the back glossed with purple, the wings with coppery-red, the chest bluish-green, and the breast coppery. J. Gould, P. Z. S. 1868, p. 219.

Sturnus vulgaris is figured. *Id.* B. Gr. Br. pt. xiv.

Acridotheres tristis, *Pastor roseus*, *Sturnus vulgaris*, and *S. unicolor*, their utility in destroying grasshoppers and locusts: A. Cretté de Palluel, Bull. Soc. Imp. d'Acclimat. 1868, pp. 259–262. The introduction of the first into Algeria: A. Grandidier, *tom. cit.* pp. 359, 360; J. Verreaux, *tom. cit.* p. 607.

Ampeliceps coronatus, Blyth (J. A. S. B. 1842, p. 195), originally described from Tenasserim, inhabits also the northern part of Cochin-China. Its habits resemble those of *Acridotheres*. J. Verreaux, P. Z. S. 1868, pp. 622, 623.

Lamprocolius defilippii (Zool. Rec. iii. p. 102), its description translated into German. E. von Martens, J. f. O. 1868, pp. 68, 69.

Æthurœdus smithi (Vig. & Horsf., Trans. Linn. Soc. 1827, xv. p. 264) should stand as *Æ. crassirostris* (Paykull, N. A. Soc. Sc. Upsal., 1815, vii. p. 282). P. L. Sclater, Ibis, 1868, p. 501.

Sericulus chrysocephalus [sc. *melinus*] in confinement. P. L. Sclater, P. Z. S. 1868, pp. 406, 622.

Corvidæ.

Corvus frugilegus, its insect-diet and consequent utility shown by examination of the contents of its stomach: — Millet *et all.* Bull. Soc. Imp. d'Acclimat. 1868, pp. 523, 524. The harm done by it: — Sénéquier, *tom. cit.* pp. 761, 762.

Corvus coronoides is figured. S. Diggles, Orn. Austral. pt. xvi.

Lycos dauricus, in Dauria occur more or less black varieties, which are referred to *L. spermologus* *. B. Dybowski & A. Parrex, J. f. O. 1868, p. 332.

Cissa venatoria in confinement. P. L. Sclater, P. Z. S. 1868, p. 526.

Gelastes is proposed as a generic name in place of *Pica*, which the author considers to be too much like *Picus*, while *Cleptes*, Gambel, is preoccupied in entomology. F. W. Mäklin, Vetensk. Grund. für Bestämm. af Fogelart. Ordningsf. pp. 106, 107, notes. [*Gelastes* has been long since used by Bonaparte for a genus of *Laridæ*.]

Garrulus melanocephalus and *G. cervicalis* are confounded (*cf.* Zool. Rec. iii. p. 102). M. T. von Heuglin, J. f. O. 1868, p. 308.

Fregilus himalayanus, Gould, is identical with *F. graculus* (L.). A. von Pelzeln, J. f. O. 1868, pp. 33, 34; Ibis, 1868, p. 317.

Nucifraga caryocatactes, its breeding in Switzerland. G. Vogel, J. f. O. 1868, p. 329.

Cracticus nigrogularis and *C. destructor* are figured. S. Diggles, Orn. Austral. pt. xix.

COLUMBÆ.

Columbidæ.

Columba livia, the various domestic breeds which have sprung from it. C. Darwin, Anim. and Pl. under Domestic. i. pp. 131–224.

Mr. Darwin was led to study domestic Pigeons with particular care, first, because the evidence that all the domestic races have descended from one known source was far clearer than with any other anciently-domesticated animal; secondly, because many treatises in various languages, some of them old, have been written on these birds, so that we are able to trace the history of the several breeds; and thirdly, because the amount of variation, arising from causes we can partially understand, has been extraordinarily great. Above 150 kinds exist, which "breed true" and have been separately named; and there can be no doubt, says the author (and most justly as it appears to us), that if well-characterized forms of the several races had been found wild, all of them would have been ranked as distinct species, and several would have been placed in different genera. These various breeds are classified by Mr. Darwin in *four* groups, as follows:—

Group I. is composed of a single Race, that of the "Pouters," having the œsophagus of great size, barely separated from the crop, often inflated. Body and legs elongated. Bill moderate. The most strongly-marked subrace,

* We imagine the *Corvus spermologus* of Vieillot (*Monedula nigra*, Brehm) to be only the young of *C. monedula*; and even if *C. dauricus* be a good species, it may well be that its young resembles that of the common European form (*cf.* Ibis, 1868, p. 447, note).

the "Improved English Pouter" (of which a figure is given, p. 137), is perhaps the most distinct of all domesticated Pigeons.

Group II. includes *three* Races: (1) "Carriers," (2) "Runts," and (3) "Barbs." The First have the bill long, narrow, and pointed, the eyes surrounded by much naked and generally carunculated skin, the neck and body much elongated. (The "English Carrier," one of the four subraces into which it is divided, is figured, p. 140.) The Second have the bill long and massive, and the body of great size. (Five subraces are described.) The Third Race of this group have the bill short, broad, and deep, the bare skin round the eyes broad and carunculated, the skin over the nostrils slightly swollen. (The "English Barb," the only subrace mentioned, is figured, p. 145.)

Group III. is artificial, and to it are assigned a heterogeneous collection of *five* Races: (1) "Fantails," (2) "Turbits" and "Owls," (3) "Tumblers," (4) "Indian Frill-backs," and (5) "Jacobins." The First are remarkable for the wonderful development of tail, consisting of many rectrices—according to one authority, of 42! In one subrace, the "English Fan-tail," which is figured (p. 147), the oil-gland is aborted; in the other, the "Java Fan-tail," it is well developed. The Second have the feathers divergent along the front of the neck and breast, the bill short and rather thick, and the œsophagus somewhat enlarged. The subraces (if any) are not enumerated, but the "African Owl" is figured (p. 149). The Third Race take their name from the habit of tumbling backwards during flight; the body is generally small, the bill usually short, sometimes excessively so, and conical. Four subraces are described, one of them, the "Lotan" or "Indian Ground-Tumbler," being very remarkable; another, the "Short-faced Tumbler," is figured (p. 152). The Fourth Race have the bill very short, and the feathers reversed. The Fifth have the feathers of the neck forming a hood, the wings and tail long, the bill moderately short. Of neither of these latter are any subraces mentioned.

Group IV. greatly resembles *Columba livia*. It comprises *two* Races: (1) "Trumpeters," and (2) Pigeons scarcely differing in structure from the wild stock. The First have a tuft of feathers at the base of the neck curling forward, the feet much feathered, and a very peculiar voice. They are larger than the wild *C. livia*. The Second are divided into five subraces. Besides these, some three or four other little-known breeds are mentioned.

Passing over a section devoted to remarkable "Individual Variations" (pp. 158–162), we come to one wherein Mr. Darwin describes at some length the "Osteological Characters" (pp. 162–171) of the different Races. These are exceedingly important, and prove that scarcely any part of the skeleton is constant, while the illustrations show, better even than the full-length figures of the birds, the remarkable nature of the modifications which have taken place in the head and parts of the sternal apparatus. Then follows a section on the "Effects of Disuse" (pp. 171–177), and the chapter closes with a "Summary of the Points of Difference between the several Domestic Races, and between the Individual Birds" (pp. 177–179).

The remainder of Mr. Darwin's account of these birds we must pass over more briefly. It treats of their "Aboriginal parent-stock," the "Wild Races of *Columba livia*" (*C. affinis*, *C. intermedia*, *C. leuconota*, *C. schimperi*, and so forth, which are commonly accounted good species, but differ much less than do nearly all the domestic forms already described), "Proofs of the

descent of the several Races" from that species, "Fertility of the Races when crossed," "Reversion to the plumage" of the wild form, "Circumstances favourable to the Formation of Races," their "Antiquity and History," "Artificial Selection," "Extinction of Intermediate Forms," "Permanence and Mutability of Certain Breeds," and, finally, a "Summary," of which we may give the following abstract:—It may be confidently concluded that all the domestic Races are descended from *C. livia*, including under that name certain wild Races, though the differences between these latter throw no light on the distinctive characters of the domestic Races. In each breed or subbreed the individuals are more variable than birds in a state of nature, and occasionally they vary in a sudden and strongly-marked manner. This plasticity apparently results from changed conditions of life. Disuse reduces certain parts of the body. Correlation of growth so ties together the organization, that when one part varies, other parts vary simultaneously. When several breeds have been formed, their intercrossing aids the progress of modification, and has even produced new subbreeds; but herein "Selection" has been the presiding power, whether followed methodically or unconsciously; and this almost inevitably leads to the extinction of the earlier and less improved forms, as well as of many intermediate links in each line of descent.

Such, then, is a very brief account of what we must regard as two of the most remarkable chapters ever written on any zoological subject; and in thus looking upon them, we entirely set aside every consideration as to the probability of the author's theory being true or false. Few reflective men will deny the utility of such an accumulation of facts relating to one species; and none will presume to question the ability with which they are presented to the reader, forming a monograph of a kind never attempted before. It would be beyond our province to express any further opinion.

Columba meyeri is figured. H. Schlegel & F. P. L. Pollen, Rech. Faun. Madag. pl. 36.

Palumbus torquatus is figured. J. Gould, B. Gr. Br. pt. xiv.

Turtur auritus, *T. senegalensis*, and *T. risorius*, their different habits in Palestine. H. B. Tristram, Ibis, 1868, pp. 210, 211.

Ptilinopus pelewensis is a new species from the Pelew Islands, nearly allied to *P. roseicapillus*, Less., from the Marianne Islands, which differs in having a distinct rose-red spot at the rictus, a white throat, a greyish-green head and neck, and other points. It is also allied to *P. fasciatus*, but that has the belly and rump dark yellow and other distinguishing characters. G. Hartlaub & O. Finsch, P. Z. S. 1868, p. 7.

Macropygia phasianella and *Chalcophaps chrysochlora* are figured. S. Diggles, Orn. Austral. pts. xviii., xx.

Megaloprepia assimilis (Gould, P. Z. S. 1850, p. 201) is regarded as a variety only of *M. magnifica*. E. P. Ramsay, P. Z. S. 1868, p. 387.

Chlorœnas subvinacea is described as a new species, from Costa Rica, lighter in colour than *C. vinacea*, the back and rump being of a cinnamon-brown, and the inner webs of the quills cinnamon-colour. It also differs from *C. nigrirostris* in being larger. G. N. Lawrence, Ann. Lyc. N. H. New York, 1868, p. 135.

Leptoptila plumbeiceps and *L. cerviniventris* are two new species from Vera Paz, Guatemala. The first also occurs in Mexico, and is allied to the South-

American *L. rufaxilla* (Rich. & Bern.), but with the top of the head of a deep lead-colour. The second resembles *L. cassini* (Zool. Rec. iv. p. 113) from Panama, but has the breast paler, with a vinous-coloured tinge, and the upper part of the belly of a deep buff. A list of eight species of the genus known to the authors is added. P. L. Sclater & O. Salvin, P. Z. S. 1868, pp. 59, 60.

Leptoptila riottii is described as a new species from Costa Rica, coming nearest to *L. brachyptera*; but that has the forehead greyer and the cheeks without any vinaceous tinge; the new species is a little darker on the breast and sides, the under wing-coverts are brighter, and the inner webs of the quills cinnamon-colour. The differences between this and *L. albifrons*, *L. verreauxi*, and *L. rufaxilla* are also pointed out. G. N. Lawrence, Ann. Lyc. N. H. New York, 1868, pp. 137, 138.

Geotrygon chiriquensis [sc. *albifacies*], *G. bourcieri*, and *G. chiriquensis* [vera]. P. L. Sclater & O. Salvin, Ex. Orn. pls. xxxix., xl., and xlii.

Geotrygon costaricensis and *G. cæruleiceps* are described as two new species from Costa Rica. The first is allied to the group represented by the Cuban *G. caniceps*, and the colour of the breast is nearly the same in each, but the new bird has longer and stouter feet. The second is said not to require comparison with any other species; its most distinguishing feature is the extent of blue on the head. [Referred to *G. chiriquensis*, Scl. *vera* (*vide suprà*). O. Salvin, Ibis, 1869, p. 317.] G. N. Lawrence, Ann. Lyc. N. H. New York, 1868, pp. 136, 137.

Dididæ.

Behn, —. Ueber die untergegangenen Vögel, zumal die Dronte. Allgem. deutsche naturhist. Zeitung, 1867, pp. 164, 169.

An abstract of Prof. Owen's paper on the Osteology of *Didus ineptus* (Zool. Rec. iii. pp. 104, 105), to which are prefixed a few remarks on its history and other particulars (some of no small interest) which have escaped the notice of former investigators. [*Cf.* Ibis, 1868, pp. 479, 480.]

Brandt, J. F. Neue Untersuchungen über die systematische Stellung und die Verwandtschaften des Dodo (*Didus ineptus*). Mélang. Biolog. Bull. Ac. Imp. Sc. St. Pétersb. vi. pp. 233–253.

These researches are based chiefly on the labours of Messrs. Clark, Coquerel, Gervais, and A. Milne-Edwards (Zool. Rec. iii. pp. 104–106); and the author, who had not seen Prof. Owen's paper on the Osteology of *Didus* (*loc. cit.*), argues in favour of its having been a Grallatorial bird, and proposes to divide that Order into six families:—(1) *Alectoridæ*, including *Palamedea*, *Psophia*, *Dicholophus*, and *Otis*; (2) *Dididæ*; (3) *Charadriidæ*; (4) *Scolopacidæ*; (5) *Herodii*, comprising *Ibis*, *Platalea*, *Tantalus*, *Ciconia*, *Anastomus*, *Dromas*, *Scopus*, *Balæniceps*, *Ardea*, and *Grus*; and lastly (6) *Rallidæ*, with *Rallus*, *Gallinula*, *Porphyrio*, *Parra*, *Fulica*, and *Podoa*. [*Cf.* Ibis, 1869, pp. 227, 228.]

Frauenfeld, Georg von. Neue aufgefundene Abbildung des Dronte u. s. w. Wien: 1868. Imp. fol. pp. 17, pls. 4.

This work contains an account of an old picture of *Didus ineptus* lately found in the private library of the Emperor of Austria, as well as one of another bird [see "*Rallidæ*"]. These are shown, with great probability, to have been painted by Hoefnagel, a Dutch artist, who flourished towards the

end of the sixteenth century; and the subjects of them were, with equal probability, living in the *vivarium* of the then Emperor Rudolf II. The picture of *Didus*, admirably reproduced in colours, differs in many respects from those hitherto known, the bird being represented of a sooty-brown colour nearly all over, with comparatively long remiges. [*Cf.* Ibis, 1868, pp. 480, 481.]

Jæckel, A. J. Eine alte Abbildung des Dronte. Zoolog. Garten, 1868, pp. 35–37.

The picture, of which a woodcut is given, is by Roelandt Savery, and is now at Pommersfelden, near Bamberg. [*Cf.* Ibis, 1868, pp. 478, 479.]

Millies, H. C. Over eene nieuw ontdekte Afbeelding van den Dodo (*Didus ineptus*, L.). Amsterdam: 1868. 4to, pp. 20. Reprinted from Verh. k. Akad. Wetensch. Amsterdam, xi.

The figure, of which a facsimile is given, was found in a copy of Clusius's 'Exot. Libr. X.' in the High School of Utrecht, and is by Adriaan van de Venne, who died in 1665. Above it is a statement of its having been drawn at Amsterdam from the life in 1626. The author gives an abstract of the history of the bird, and treats of the derivation of its various names, besides furnishing some other interesting information. In 1647 a live Dodo was sent to Japan by the Governor of Batavia. Dr. Willigen, of Haarlem, possesses a coloured representation of the species, ascribed to Pieter Holsteyn, but would not allow it to be copied. Another figure, "in a bird-book," by the same artist, also exists in Holland, but the author has not seen it. [*Cf.* Ibis, 1868, p. 477, 478.]

Newton, Alfred. On a Picture supposed to represent the Didine Bird of the Island of Bourbon (Réunion). Trans. Zool. Soc. vi. pp. 373–376, pl. 62.

The picture the subject of this paper has been twice before mentioned in this annual (Zool. Rec. iii. pp. 106, 107, iv. p. 114). It is in water-colours, and bears the monogram of Pierre Witthoos, who died in 1693. It appears to have been drawn from life, and represents a bird in general shape not unlike the true *Didus ineptus*, but white, with some admixture of yellow, and having the four first remiges directed downwards and forwards. These characters are shown to agree with those of the Bourbon bird, as described and figured by old voyagers; and the author hence infers that this picture represents that species rather than the Mauritian one. There is a difficulty, however, which must not be neglected, in the way of this view; one of the eye-witnesses (Du Bois) says that the "Solitaire" of Bourbon had a "becq fait comme celuy des *Bécasses*," which is very unlike that represented here. A coloured copy of the picture is given.

Newton, Alfred and Edward. On the Osteology of the Solitaire or Didine Bird of the Island of Rodriguez, *Pezophaps solitaria* (Gmel.). (Abstract) Proc. Roy. Soc. 11 June, 1868, vol. xvi. pp. 428–433. Reprinted Ann. & Mag. N. H. 4th ser. ii. pp. 159–165.

This paper, intended to appear at full length in the 'Philosophical Transactions,' is founded on the remains before mentioned (Zool. Rec. ii. p. 124, iv. p. 114). They were discovered in caves at Rodriguez in 1866, and are about 2000 in number, including almost all the most important parts of the skeleton. This vast series shows that there was a very great amount of indi-

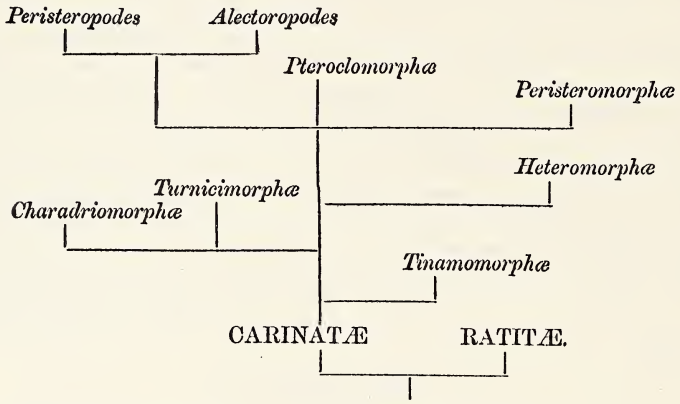
vidual variability in the species, which renders the task of describing them difficult; but from this wealth of material the authors have greater confidence in the opinions they declare. Two almost entire skeletons (supposed to be male and female) have been mounted; and these are described in much detail, Prof. Owen's paper on *Didus* (Zool. Rec. iii. pp. 104, 105) being followed as a pattern, and the whole compared bone by bone with that bird and also with *Didunculus*. From the latter *Pezophaps* differs quite as much as does *Didus*, to which it is nearly allied. The most remarkable feature is the presence of a bony knob on the radial side of the metacarpal bone, which is very largely developed in the supposed males, and only slightly in the supposed females. This most singular and unexpected discovery corroborates the veracity of Leguat, who described the males as having a little round mass like a musket-ball under the wing. A microscopic description of its structure, by Mr. J. Gedge, is added. The differences between *Didus* and *Pezophaps* are then pointed out, and more detailed generic characters assigned to each. After reference to the narratives of the old voyagers, it is suggested that both birds were most likely exterminated by feral swine. The extraordinary fidelity of Leguat's account is next considered. It is certainly borne out by the facts in every case, save perhaps one, the inference that the bird was monogamous, reasons being given for doubting this particular. After this the authors indulge in some speculations as to the origin of species and the process of Natural Selection, with remarks on the ornis of the Mascarene Islands. Whether this has resulted from that process must remain an open question; but they conclude by declaring their belief that *Pezophaps* and *Didus* must have sprung from the same parent stock. [*Cf.* Ibis, 1868, p. 362.]

GALLINÆ.

Huxley, T. H. On the Classification and Distribution of the *Alectoromorphæ* and *Heteromorphæ*. Proc. Zool. Soc. 1868, pp. 294–319, with Map.

The generalizations to which this paper leads have been already recounted [see "General Subject"]. Its first section is a consideration of the proper limits of the *Alectoromorphæ* and of its subdivisions. The name is now restricted to the *Phasianidæ* [including the *Tetraonidæ*], *Megapodiidæ*, and *Cracidæ*, leaving out the *Turnicidæ* and *Pteroclidæ* [of which more presently]. The osteological character of these three groups is given; and it is then shown that they are divisible into two sections, which the author terms:—*Peristeropodes*, composed of the *Megapodiidæ* and *Cracidæ*; and the *Alectoropodes*, formed by the Galline, Pavonine, Phasianine, and Tetraonine birds—in other words, the *Phasianidæ* and *Tetraonidæ* of most authors, which present "two types of structure," one of which may be termed Galline and the other Tetraonine. These two series of forms meet among the Partridges and Quails—*Perdix* lying on the latter and *Caccabis*, *Rollulus*, *Francolinus*, and *Coturnix* on the former side of the boundary. *Odontophorus* probably goes with *Perdix*. The different facts on which this opinion is founded are adduced in considerable detail. Then comes a section on the relations of the *Pteroclidæ* and *Hemipodiidæ* [*Turnicidæ*] to the true *Alectoromorphæ*, and the first are shown to be completely intermediate between the last and the *Peristeromorphæ*. As they cannot be included in either group without destroying

definition, Prof. Huxley makes a group of them, of equal value with the other two, under the name of *Pteroclomorphæ*. Further, the *Turnicidæ* differ much more from any one of these three groups than they do among themselves, and accordingly are raised to an independent group as *Turnicimorphæ*. The third section treats of the affinities of *Opisthocomus*, the osteology of which singular and puzzling form is described with great care; and the author proposes to regard it as the type and sole member of a group which may be called *Heteromorphæ*. The fourth section considers the Taxonomic Conclusions to be drawn from the foregoing researches; and its substance may be best summed up by a "phylum" on the evolution theory as follows:—



The fifth section is devoted to the Geographical Distribution of *Alectoromorphæ*; and to the understanding of this the map which the author appends is of much use. The area occupied by the *Peristeropodes* lies mostly, though not at all wholly, south of the equator; a line drawn to limit their northern extension would cross America in Mexico, then, sweeping southward and eastward, would round the Cape of Good Hope, leaving Africa as well as India and the Indo-Malayan province entirely to the north, but taking in the Nicobar Islands; then, following what Prof. Huxley well proposes to call "Wallace's Line" (*Cf.* Ibis, 1859, pp. 440–454), through the Straits of Macassar, but comprehending the Philippine Islands, it travels southward and eastward to the Samoan Archipelago. This, as has been stated, is the northern limit of the *Peristeropodes*; the *Alectoropodes*, on the other hand, occupy the great northern area thus excluded, only a few forms of *Coturnix*, *Odontophorus* (with its allies), and *Meleagris* occurring to the south. For the rest of this paper we again refer to our previous remarks. [See "General Subject."]

Cracidæ.

The statement with respect to the interbreeding of *Ortalida maccalli* with the domestic Fowl (Zool. Rec. iii. p. 107) confirmed by a similar assertion in regard to *O. vetula* (?). A. Dugès, Bull. Soc. Imp. d'Acclimat. 1868, p. 559.

PHASIANIDÆ.

Gallus bankiva, the various domestic breeds which have sprung from it. C. Darwin, Anim. and Pl. under Domestic. i. pp. 225-275.

Thirteen breeds are described:—(1) "Game," (2) "Malay," (3) "Cochin" or "Shangai," (4) "Dorking," (5) "Spanish" (with fig. p. 226), (6) "Hamburg" (with fig. p. 228), (7) "Crested" or "Polish" (with fig. p. 229), including seven subbreeds, (8) "Bantam," (9) "Rumpless," (10) "Creepers" or "Jumpers," (11) "Frizzled" or "Caffre," (12) "Silk," and (13) "Sooty." It is argued that all have descended from one stock, and that stock is *G. bankiva*. The ancient history of the Domestic Fowl is then given, and an account first of the external and then of the osteological differences between the several breeds, the latter differences being strikingly illustrated by figures. To this follow remarks on the effects of use and disuse on certain parts of the structure, and on correlation of growth, the whole forming an epitome only inferior to the author's treatise on *Columba livia* (*supra*, pp. 94–96).

Gallus domesticus, a hen in cock's plumage and yet fertile. A. von Homeyer, Zool. Garten, 1868, pp. 94–97.

Gallus ferrugineus and *G. sonnerati*, their geographical distribution. W. T. Blanford, J. A. S. B. xxxvi. (1867), pp. 199, 200.

BLYTH, E. Diverses espèces de Faisans pouvant être acclimatées en Angleterre. Bull. Soc. Imp. d'Acclimat. 1868, pp. 704–737.

A translation of a series of articles which appeared in 'Land and Water' in December 1866 and January 1867.

Lophophorus lhuysi (Zool. Rec. iii. p. 107) is figured and diagnosed from *L. refulgens*. P. L. Sclater, P. Z. S. 1868, p. 1, pl. i.

Lophophorus impeyanus, its breeding in England. E. Blyth, Bull. Soc. Imp. d'Acclimat. 1868, pp. 677, 678 [translated from 'Land and Water,' Nov. 9, 1867].

Phasianus reevesi and *Crossoptilum auritum* bred in the Zoological Gardens in 1867, and several young of each were reared: A. D. Bartlett, P. Z. S. 1868, pp. 114, 115; Bull. Soc. Imp. d'Acclimat. 1868, pp. 679, 680. Their geographical range, as well as that of *P. torquatus* and *Thaumalia picta*: A. David, P. Z. S. 1868, p. 210.

Phasianus versicolor, *Catreus wallichi*, *Euplocamus melanonotus*, *E. albocristatus* and *E. horsfieldi*, on the rearing of them. L. de Beauffort, Bull. Soc. Imp. d'Acclimat. 1868, pp. 268–274.

Euplocamus nobilis, Sclat. (P. Z. S. 1863, p. 119, pl. xix.), in confinement, P. L. Sclater, P. Z. S. 1868, p. 261.

Euplocamus cuvieri (Temm. Pl. Col. 1) is from Arracan, and is intermediate between *E. lineatus* and *E. horsfieldi*. *Id. tom. cit.* p. 623.

Ceriornis satyra is figured. J. Gould, B. As. pt. xx.

Crossoptilum drouyni is described as a new species from the interior of China, differing in several respects from *C. tibetanum* and *C. auritum*, and especially by the uniform white of the whole body and wings. H. Milne-Edwards, Comptes Rendus, 20 Apr. 1868, lxvi. pp. 787, 788; R. Z. 1868, pp. 253, 254.

[Qu. *C. mantchuricum* (Zool. Rec. i. p. 88, iv. p. 115)?].

Pavo nigripennis is supposed to be a native of Annam: R. Swinhoe, Ibis,

1868, pp. 353, 354; P. Z. S. 1868, pp. 530, 531. Particulars of its origin: C. Darwin, Anim. and Pl. under Domestic. i. pp. 290–292.

Pavo cristatus, its variability under domestication. *Id. loc. cit.*

Meleagris mexicana [sc. *gallopavo* *], its variability under domestication. C. Darwin, Anim. and Pl. under Domestic. i. pp. 292–294. Figured, D. G. Elliot, B. N. Am. pt. x.

Numida meleagris, Linn., its probable descent from *N. ptilorhynchus*, Licht., and variation under domestication. C. Darwin, Anim. and Pl. under Domestic. i. p. 294.

Numida ——, a second species (besides *N. tiarata*), is found in Madagascar, which, according to Capt. W. F. W. Owen (Narrat. Voy. Afr. Arab. & Madag. 1833, ii. p. 36), has a long tail. P. L. Sclater, Ibis, 1868, pp. 501, 502.

Tetraonidæ.

Pternistes sclateri (Zool. Rec. iv. p. 115) occurs at Huilla, West Africa. J. V. Barboza du Bocage. Jorn. Sc. Lisboa, 1868, p. 49.

Caccabis græca, *C. saxatilis*, and *C. chukar*: the second, from Palestine, probably not specifically identical with the others. H. B. Tristram, Ibis, 1868, pp. 213, 214.

Caccabis rubra is figured. J. Gould, B. Gr. Br. pt. xiii.

Francolinus vulgaris and *F. pictus*, their geographical distribution in India. W. T. Blanford, J. A. S. B. xxxvi. (1867) p. 200.

Malacoturnix superciliosus (Zool. Rec. iv. p. 116) is figured. J. Gould, B. As. pt. xx.

Synœcus australis and *S. chinensis* are figured. S. Diggles, Orn. Austral. pt. xx.

Ortyx virginianus has occurred in Kent. J. W. Stephenson, Zool. S. S. p. 1059. [*Qu.* imported?]

Tetrao urogallus, female in male plumage, and hybrid between the male of that species and the female of *T. tetrix*, described. V. Fatio, Bull. Soc. Vaudoise Sc. Nat. (1868) ix. pp. 590–598.

Bonasia umbellus, its habits. A. Fowler, Am. Nat. 1868, pp. 365–367.

Pteroclidæ.

The birds forming this family are erected into a group under the name of *Pteroclomorphæ*, coordinate with the *Alectoromorphæ*. T. H. Huxley, P. Z. S. 1868, pp. 302, 303.

Syrrhaptes paradoxus, its occurrence in Venetia in 1863–4: E. de Betta, Atti dell' Istituto Venet. tom. x. (23 March and 24 April 1865). In Italy: T. Salvadori, Atti Accad. Sc. Torino, 1868, pp. 293, 294. In Livonia: A. v. Middendorff, Sib. Reise, Bd. iv. Th. 2. Lief. 1, p. 1026, note.

Turnicidæ.

The birds forming this family are erected into a group under the name of *Turnicimorphæ*, coordinate with the *Alectoromorphæ* and *Pteroclomorphæ*. T. H. Huxley, P. Z. S. 1868, pp. 303, 304.

* It seems to us that the name *gallopavo* must be retained for the tame race, and consequently for the species whence it has sprung, having been applied by Linnæus (S. N. 12th ed. i. p. 268) to the form domesticated in Sweden (Faun. Suec. no. 198).

Tinamidæ.

Rhynchotis rufescens bred in 1867 in the Zoological Gardens. Sixteen or more young birds were hatched, and reared. Incubation was performed exclusively by the male [a Struthious-like character, confirming the views of Mr. Parker and Prof. Huxley (Zool. Rec. iii. p. 108, iv. p. 47) as to the affinity of the *Tinamidæ* (*Dromæognathæ*) with the *Struthiones* (*Ratitæ*)]. The eggs and young are described and (the former badly) figured. A. D. Bartlett, P. Z. S. 1868, pp. 114, 115, pl. xii.

Tinamus frantzii is a new species from Costa Rica, about the size of *T. robustus*, but darker and different in colouring, having a rufous throat, mottled primaries, and strikingly longer toes. G. N. Lawrence, Ann. Lyc. N. H. New York, 1868, pp. 140, 141.

Tinamus robustus, *Crypturus sallæi*, *C. boucardi*, and *C. meserythrus* are figured. P. L. Sclater & O. Salvin, Ex. Orn. pls. xliv.–xlvii.

Opisthocomidæ.

Opisthocomus cristatus, its osteology most carefully described, with illustrative woodcuts, and its affinities considered. It is regarded as the type and sole member of a group called *Heteromorphæ*, coordinate with the *Alectoromorphæ*, *Pteroclomorphæ*, and *Turnicimorphæ*. T. H. Huxley, P. Z. S. 1868, pp. 304–311, figures.

GRALLÆ.

Rallidæ.

Frauenfeld, Georg von. Neue aufgefundene Abbildung des Dronte und eines zweiten kurzflügeligen Vogels, wahrscheinlich des *Poule rouge au bec de Bécasse* der Maskarenen, u. s. w. Wien: 1868. Imp. fol. pp. 17, pls. 4.

The first of the pictures described we have already mentioned (*suprà*, pp. 97, 98). The second is far more valuable, as it probably represents a form entirely extinct and only very imperfectly known through the rude figures and slight notices given by old voyagers. This species the author calls *Aphanapteryx imperialis*; and an excellent copy of the picture is given. It was of a dusky rust-colour, with a somewhat long, curved and trenchant bill, stout legs, wings (if any) quite useless for flight, and no tail.

This discovery is a most interesting one, particularly when it is taken in connexion with the fact that among the bones found in the Mare aux Songes in Mauritius (Zool. Rec. ii. p. 124, iii. p. 104) are some, collected by Mr. Edward Newton, which have been identified as those of this bird (Ibis, 1868, pp. 481, 482) by M. Alphonse Milne-Edwards, who, however, considers the species to have been already named by Prof. Schlegel (Versl. en Meded. K. Akad. Amsterd. ii. p. 356) *Didus broeckii*, but M. Milne-Edwards agrees with Herr von Frauenfeld in referring it to the family *Rallidæ*. [*Cf.* F. C. Noll, Zool. Garten, 1868, p. 282: A. Milne-Edwards, Ann. Sc. Nat. Zool. 5e sér. x. pp. 325–346; Ibis, 1869, pp. 256–275.]

Sclater, P. L., & Salvin, O. Synopsis of the American *Rallidæ*. Proc. Zool. Soc. 1868, pp. 442–470, pl. xxxv.

One of the best monographs known to us, surpassing (and this is saying

much) anything that the authors, either jointly or severally, have attempted. The American members of the family, so far as the authors are acquainted with them, consist of forty-eight species, belonging to ten genera, disposed in three subfamilies, *Rallinæ*, *Fulicinæ*, and *Heliornithinæ*. The list of species is synonymatic, descriptive, and geographical, while to nearly each genus, or section of a genus, is prefixed a "*clavis specierum*," showing concisely the diagnostic characters of each species. The subfamily *Rallinæ* is made to contain five genera, viz. :—*Rallus* with eight species; *Aramides* with seven; *Porzana* with eighteen (of which two are new, and one receives a new name), arranged under seven sections—*Porzana*, *Rufirallus*, *Laterirallus*, *Crybastus*, *Creciscus*, *Coturnicops*, and (sect. nov.) *Neocrex*; *Crex* and *Thyrorhina* (gen. nov.) each with one. The *Fulicinæ* include four genera, *Porphyrio* and *Porphyriops* with two species each, *Gallinula* with one, and *Fulica* with seven. The *Heliornithinæ* are represented only by the species *Heliornis fulica* (Bodd.).

"*Rallus aquaticus*" from Damaraland (Ibis, 1868, p. 261) should be *R. cærulescens*, as also probably the specimen from Natal (*op. cit.* 1859, p. 249). J. H. Gurney, Ibis, 1868, p. 471.

Rallina kioloides is figured. H. Schlegel & F. P. L. Pollen, Rech. Faun. Madag. pl. 39.

Fulica chilensis, its head figured, very different from *F. stricklandi*. P. L. Sclater & O. Salvin, P. Z. S. 1868, pp. 176, 177.

Fulica cornuta, *F. gigantea*, *F. ardesiaca*, *F. armillata*, *F. frontata*, *F. leucopyga*, *F. americana*, and *F. leucoptera*, woodcuts of their heads (the first from the type specimen): *Iid. tom. cit.* pp. 463–468. The third, fourth, sixth, and last figured: *Iid.* Ex. Orn. pls. lvii.–lx.

Milne-Edwards, A. Mémoire sur une espèce éteinte du genre *Fulica* qui habitait autrefois l'île Maurice. Comptes Rendus, 30 March, 1868, lxvi. pp. 646–650. Reprint of the paper noticed last year (Zool. Rec. iv. pp. 117–118). Abstract, Rev. Zool. 1868, pp. 147–152; F. C. Noll, Zool. Garten, 1868, pp. 280–282. [*Cf.* Ibis, 1868, p. 482, note.]

Fulica newtoni [ut suprà], its remains and a restoration of it is figured, with *F. cristata* and *F. atra*. A. Milne-Edwards, Ois. Foss. Fr. pls. cvii., cviii.

Gypsornis cuvieri, *Rallus eximius*, *R. major*, *R. intermedius*, *R. christii*, *R. beaumonti*, *R. porzanoides*, *R. dispar*, and *R. crex*, their remains figured. *Id. op. cit.* pls. ciii.–cv.

Leguatia (*Gallinula*) *gigantea* (Zool. Rec. iii. p. 109), Prof. Schlegel's restoration of it copied. Am. Nat. 1868, p. 615.

Porphyrio smaragdonotus, Temm., from Natal, is shown to be different from *P. madagascariensis* (Lath.). J. H. Gurney, Ibis, 1868, pp. 469, 470.

Porphyrio cœlestis is described as a new species from China, differing from *P. smaragdinus*, Temm. (qu. *P. indicus*, Horsf. ?), in having a purple instead of a grey belly, and a black abdomen. R. Swinhoe, *tom. cit.* pp. 59, 60.

Porphyrio melanotus (lege *melanonotus*), a small local variety occurs in the Pelew Islands. G. Hartlaub & O. Finsch, P. Z. S. 1868, pp. 8, 117.

Porphyrio martinicus and *P. parvus*, their heads figured. P. L. Sclater & O. Salvin, *tom. cit.* pp. 459, 460.

Porphyriops leucopterus (Zool. Rec. iii. p. 109), its description translated into German: E. von Martens, 1868, pp. 69, 70. Said to be distinct from *P. melanops*; P. L. Sclater & O. Salvin, P. Z. S. 1868, p. 175, note. Subse-

quently referred to that species, though apparently with doubt: *Iid. tom. cit.* p. 461.

Neocrex is apparently the name of a new section of *Porzana*, established for the reception of *P. erythrops*, Sclater (Zool. Rec. iv. p. 117), being of larger size, and having the tarsus and toes short. *Iid. tom. cit.* pp. 450, 457.

Thyrorhina is a new genus, of which *Crex schomburgki*, Cab., is the type. It has the nostrils partly covered in front by a horny membrane, and completely divided from each other by a median septum. Two figures of the head of *T. schomburgki* are given. *Iid. tom. cit.* pp. 443, 458.

Porzana (*Rufirallus*) *levrandi* and *P.* (*R.*) *castaneiceps* are new species: the former, which is figured, is from Venezuela, and of about the size and shape of *P. cayennensis*, but whole coloured above, and white along the middle beneath; the latter is from the Rio Napo, and nearly allied to *P. concolor*, but the chestnut-colour extends only over the head and front of the body below. *Iid. tom. cit.* pp. 451–453, pl. xxxv. [*Fig. mirabilis!*]

Porzana (*Laterirallus*) *hauxwelli* is described a new species, but is *P. fasciata* (Zool. Rec. iv. p. 117). The reason for changing the name is not given: *Iid. tom. cit.* p. 453. Figured, as also *P. melanophæa*, *P. albigularis*, and *P. leucopyrrha*, and a complete list of the American species of the section given: *Iid.* Ex. Orn. pls. liii.–lvi.

Scolopacidæ.

Totanus ochropus supposed to have bred in Lincolnshire. J. Cordeaux, Zool. S. S. pp. 1412, 1459.

Totanus glareola is figured. J. Gould, B. Gr. Br. pt. xiv.

Scolopax gallinula moults in spring. E. H. Rodd, Zool. S. S. p. 1220.

Scolopax sabinii, its occurrence in Dorsetshire. J. H. Gurney, jun., Zool. S. S. p. 1293.

Scolopax wilsoni perching on trees. W. A. Pope, Am. Nat. 1868, p. 329.

Scolopax major unusually abundant in England in 1868. J. H. Gurney, jun., Zool. S. S. p. 1422; G. F. and M. A. Mathew, *tom. cit.* pp. 1460, 1461; A. P. E. Powell and C. M. Adamson, *tom. cit.* 1461; J. W. Stephenson and E. H. Rodd, *tom. cit.* p. 1482. The specimen mentioned by the last had *eighteen* rectrices.

Gallinago angolensis is described as a new species from Huilla, resembling *G. æquatorialis*, Rüpp., but larger, and with a much longer bill. J. V. Barboza du Bocage, Jorn. Sc. Lisboa, 1868, pp. 49, 50.

Limosa rufa and *L. melanura* are figured. J. Gould, B. Gr. Br. pt. xiv.

Limosa europygialis, head figured. S. Diggles, Orn. Austral. pt. xvi.

*Ibidorhynchus struthersi** may possibly be a bird, with red bill and legs, seen on the banks of the Oural. J. H. Gurney, Ibis, 1868, p. 394, note.

Tringa maculata breeding in Pennsylvania. W. J. Hoffmann, Am. Nat. 1868, p. 216, 217.

Charadriidæ.

Van der Hœven, J. Annotationes de *Dromade ardeola* Payk. Dresdæ:

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* It seems at present uncertain what may be the real place of this form. We here follow the assignment of Dr. Jerdon (B. Ind. iii. p. 685).

1867, 4to, pp. 16, pl. Separately printed from Nov. Act. Ac. L.-C. Nat. Cur. xxxiii. French translation, Arch. Néerland. 1868, pp. 281–295.

A very excellent treatise on this form (the position of which has long been in doubt), including a somewhat minute description and a figure of its skeleton. It is shown to stand next to *Hæmatopus* (*cf.* Ibis, 1867, p. 351).

Œdicnemus indicus and *Œ. inornatus* (Zool. Rec. iii. p. 110), their descriptions translated into German. E. von Martens, J. f. O. 1868, p. 69.

Defilippia (Zool. Rec. iii. p. 110), the characters of the genus translated into German. *Id. tom. cit.* p. 67.

Charadrius leschenaulti and *C. asiaticus*, Pall., both occur in Palestine. H. B. Tristram, Ibis, 1868, pp. 323, 332.

Glareola nordmanni, Fischer, is beautifully figured from a Natal specimen. J. H. Gurney, *tom. cit.* pp. 254, 255, pl. viii.

Glareola pratincola, the chick figured. Alb. Marchand, R. Z. 1868, pl. 5.

Glareola ocularis is figured. H. Schlegel & F. P. L. Pollen, Rech. Faun. Madag. pl. 38.

Cursorius gallicus, its occurrence for the first time in Scotland (7 Oct. 1868): F. Walker, Zool. S. S. p. 1459; J. A. H. Brown, *tom. cit.* p. 1482. At Lemgo, not far from Detmold, in Germany (18 Sept. 1868): R. Meyer, Zool. Garten, 1868, pp. 382, 383.

Otididæ.

Otis macqueeni, the female possesses the ruff as well as the male. A. Hume, Ibis, 1868, p. 241.

Otis kori and *O. australis*, the gular pouch of the former described and figured, and the latter represented in one of its paroxysms, with the pouch enormously distended (*cf.* Zool. Rec. iv. p. 120). J. Murie, P. Z. S. 1868, pp. 471–477, pl. xxxvi. [See "Anatomy."]

Gruidæ.

Grus leucogeranus, a very full account of its habits, as observed in India, with a detailed description of its changes of plumage, and a table of dimensions: A. Hume, Ibis, 1868, pp. 28–40. In confinement: P. L. Sclater, P. Z. S. 1868, p. 526.

Grus americana in confinement, together with eleven other species of the family. *G. fraterculus* was probably established only on a small specimen of *G. canadensis*. *Id. tom. cit.* p. 567.

Grus cinerea, its migration in Neu-Vorpommernem. — Quistorp, J. f. O. 1868, pp. 259–261.

Rhinochetidæ.

Rhinochetus jubatus, from a consideration of its osteology, forms the type of a distinct family, belonging to Professor Huxley's *Geranomorphæ*, and is most nearly allied to *Psophia* and *Eurypyga*: W. K. Parker, P. Z. S. 1868, p. 2. [The foregoing is only announced as the result of a paper which will appear in the 'Transactions of the Zoological Society.] Its egg (laid in the Zoological Gardens) figured and described; it very closely resembles that of *Eurypyga helias* (Zool. Rec. iii. p. 111), which is also figured; but the plate

does not give an adequate representation of either. The author's views as to the affinity of these two forms (*ut suprà coll.*) is thereby confirmed. A. D. Barlett, *tom. cit.* pp. 115, 116, pl. xii.

Ardeidæ.

Herodias andamanensis (Zool. Rec. iv. p. 120) is identical with *H. concolor*. E. Blyth, Ibis, 1868, p. 133.

Ardea perplexa, *A. stellaris*, and *A. cinerea*, their remains figured. A. Milne-Edwards, Ois. Foss. Fr. pl. xcvi.

Botaurus stellaris breeding in Norfolk. T. E. Gunn, Zool. S. S. pp. 1220, 1221; in Buckinghamshire, A. C. Kennedy, *tom. cit.* pp. 1255, 1256.

Tigrisoma cabanisi is figured. P. L. Sclater & O. Salvin, Ex. Orn. pl. xlviii.

Ciconiidæ.

Balæniceps rex feeds chiefly on fish, which it catches in company like the *Pelecani*, but stands in the water like the *Ardeidæ*. M. T. von Heuglin, J. f. O. 1868, p. 212.

Ciconia alba, its breeding in captivity: M. Schmidt, Zool. Garten, 1868, pp. 10–23, 41–51. Its life at large: —Krauss, *tom. cit.* pp. 127–136. Its habits in Courland: J. H. Kawall, Bull. Soc. Imp. Nat. Mosc. 1867, pp. 486–497.

Leptoptilus crumenifer, notes on, in North-eastern Africa. E. Marno, Zool. Garten, 1868, p. 242.

Platalea tenuirostris, Temm., should be called either *P. alba* or *P. cristata*, Scopoli. The name "*P. luzoniensis*, Scopoli," which seems to be an invention of Bonaparte's (Consp. Av. ii. p. 148), probably refers to the same species. A. Newton, Ibis, 1868, p. 257, note.

Platalea leucorodia is figured. J. Gould, B. Gr. Br. pt. xiii.

Tantalidæ.

Ibis. It must have been the intention of the founder of this genus to keep in it the only species to which the name, as a common name, was properly applicable—the species which the old Egyptians reverenced. Accordingly the *Tantalus æthiopicus* of Latham should be referred to the genus *Ibis*. J. H. Gurney, Ibis, 1868, p. 259.

Falcinellus igneus is figured. S. Diggles, Orn. Austral. pt. xviii.

ANSERES.

Phœnicopteridæ.

Phœnicopterus rubidus is described as a new species from India, easily distinguished from *P. roseus* by its smaller stature and brighter plumage, the whole colour being a uniform bright pink instead of rosy-white, and the wing-coverts, upper tail-coverts, and under surface of the wing intensely bright—besides some other differences. H. W. Feilden, Ibis, 1868, pp. 495, 496. [Probably only *P. minor*, Temm.: T. C. Jerdon, Ibis, 1869, pp. 230–232. Differs materially from *P. minor*: G. R. Gray, *tom. cit.* p. 355, note.]

Phœnicopterus croizeti, *Palœlodus ambiguus*, *P. gracilipes*, *P. minutus*, *P. goliath*, *P. crassipes*, *Agnopterus laurillardi*, and *Elornis littoralis* are figured. A. Milne-Edwards, Ois. Foss. Fr. pls. lxxx.–xc.

Anatidæ.

Anser segetum has occurred in India. E. Blyth, Ibis, 1868, p. 249.

Anser ferus, its variability under domestication: C. Darwin, Anim. and Pl. under Domestic. i. pp. 287–290. A humerus found in the Cambridgeshire fens, and one of a larger species in the gravel of the same county: J. F. Walker, Ann. & Mag. N. H. 4th ser. ii. p. 388.

Anser cygnoides, its parent form said to be unknown or extinct. C. Darwin, Anim. and Pl. under Domestic. i. p. 237. [*Cf.* Ibis, 1868, p. 218.]

Bernicla leucopsis has really occurred in North America. S. F. Baird, Am. Nat. 1868, p. 49.

Bernicla jubata, head figured. S. Diggles, Orn. Austral. pt. xviii.

Cereopsis novæ-hollandiæ, its breeding in confinement. E. Roger, Bull. Soc. Imp. d'Acclimat. 1868, pp. 501–503.

Exanthemops is proposed as a new genus for the reception of *Anser rossi*, Cassin (Proc. Acad. Philad. 1861, p. 72), on account of the wart-like excrescences with which its face is beset; and the bird is figured. D. G. Elliot, B. N. Am. pt. ix. [*Cf.* Ibis, 1868, pp. 345, 346.]

Plectropterus gambensis, not *P. rueppelli* [Ibis, 1868, p. 292], is the species found on the Shiré River. P. L. Sclater, P. Z. S. 1868, pp. 261, 262; Ibis, 1868, p. 502.

Schlegel, F. Die Schwäne. Zool. Garten, 1868, pp. 60–62.

Notes on the eight recognized species of *Cygninæ*.

Cygnus passmorii (Zool. Rec. iv. p. 121) maintained to be distinct from *C. buccinator*. W. Hincks, P. Z. S. 1868, pp. 211–213.

Cygnus atratus and *C. olor* [?], hybrids between them. — Pissot, Bull. Soc. Imp. d'Acclimat. 1868, pp. 11, 12; Zool. Garten. 1868, pp. 189, 190.

Cygnus olor and *Anser cinereus*, Herr J. P. van Wickevoort-Crommelin's notes on the hybrids between them and between other species of *Anatidæ* (Zool. Rec. iv. p. 121) translated. Bull. Soc. Imp. d'Acclimat. 1868, pp. 780–786.

Cordeaux, John. An account of Wild Fowl killed at the Ashby Decoy, from September 1833 to April 1868. Zool. Sec. Ser. pp. 1378, 1379.

An interesting list of the members of six species of *Anas* (*A. boschas*, *A. crecca*, *A. penelope*, *A. clypeata*, *A. acuta*, and *A. strepera*) taken during thirty-five seasons at this celebrated Lincolnshire decoy. The largest number was 6357 in 1834–5, and next 6059 in 1852-3, the smallest was 936 in 1865–6, and next 1132 in 1836–7. *A. boschas* though usually, as might be expected, by far the most numerous species, was in many years surpassed by *A. crecca*.

Anas boschas, its variability under domestication, illustrated by figures of some of the bones. C. Darwin, Anim. and Pl. under Domestic. i. pp. 276–287.

Anas iopareia, Philippi (Arch. f. Naturg. 1860, p. 24), is a hybrid between *A. boschas* [?] and *A. moschata*. R. A. Philippi, P. Z. S. 1868, p. 531.

Anas mascarinus is the name proposed for a species said to have formerly existed in a wild state in Réunion, but also declared to be a degenerate form

of the common European breed! A. Vinson, Bull. Soc. Imp. d'Acclimat. 1868, pp. 626, 627. [Qu. *Anas melleri* (Zool. Rec. i. p. 94) ?]

Aix sponsa, the manner in which the young reach the water. A. von Homeyer, J. f. O. 1868, pp. 356, 357.

Chaulelasmus streperus is figured. J. Gould, B. Gr. Br. pt. xiii.

Spatula rhynchotis is figured. S. Diggles, Orn. Austral. pt. xvii.

Heteronetta (Zool. Rec. iii. p. 112), the characters of the genus translated into German. E. von Martens, J. f. O. 1868, p. 67.

Erismatura vittata, Philippi (Arch. f. Naturg. 1860, p. 26), is, as has been already suggested by Mr. Sclater (P. Z. S. 1867, pp. 335, 336), only the young of *E. ferruginea*. R. A. Philippi, P. Z. S. 1868, p. 531.

Fuligula rufina, its occurrence in Somerset. G. F. Mathew, Zool. S. S. p. 1098; in Norfolk, H. Stevenson, *tom. cit.* p. 1128.

Laridæ.

Larus canus, further account of it (Zool. Rec. iv. pp. 122). H. Blake-Knox, Zool. S. S. pp. 1075–1088.

Larus hutchinsi, Richards, is believed to be a good species. E. Coues, Proc. Essex Inst. v. pp. 58, 59. Figured, with *L. brachyrhynchus*. D. G. Elliot, B. N. Am. pt. xii.

Rissa kotzebui and *R. nivea* are figured. *Id. op. cit.* pt. xi.

Larus minutus occurred in England unusually often in 1868, chiefly in the autumn. J. H. Gurney, jun., Zool. S. S. pp. 1295, 1379, 1424, 1462, 1482; G. B. Ashmead, *tom. cit.* p. 1462.

Xema sabinii, its occurrence in Dublin Bay and in county Down. H. Blake-Knox, Zool. S. S. p. 1099.

Sterna fuliginosa, a description of its breeding-place (the so-called "Wide-awake Fair") at Ascension. R. M. Sperling, Ibis, 1868, pp. 286–288.

Sternula balænarum, Strickl. (Contr. Orn. 1852, p. 160), has occurred at Table Bay. E. L. Layard, Ibis, 1868, p. 248.

Sternula jerdoni is the name proposed for a bird from Burmah should it prove distinct from *S. minuta* (ex India). It may, however, be *S. orientalis* (Licht.). *Sterna innotata*, from the same country, is described as a new species with a position between *Gelochelidon* and *Onychoprion*. R. C. Beavan, Ibis, 1868, pp. 403, 404.

Hydrochelidon nigra, *H. leucoptera*, and *H. leucoparia* are figured. J. Gould, B. Gr. Br. pt. xiv.

Procellariidæ.

Giglioli, Enrico, & Salvadori, Thommaso. Nuove specie di Procellaridi raccolte durante il viaggio fatto intorno al mondo negli anni 1865, 1866, 1867, 1868 dalla pirocorvetta italiana *Magenta*. Atti Soc. Ital. Sc. Nat. vol. xi. fasc. iii. 16 Sept. 1868. [English version (which was first actually printed), Ibis, 1869, pp. 61–68.]

Four species, and perhaps a fifth, are described as new. They are:—

Æstrelata [lege *Œstrelata*] *magentæ*, from the Pacific between lat. 26° and 39° and long. 88° and 125° W., allied to *Procellaria rostrata*;

Æ. [lege *Œ.*] *arminjoniana* from near Trinity Island in the South Atlantic, having many affinities with *P. neglecta*, Schlegel, and being also allied to *P. parvirostris*, Peale;

Æ. [lege *Œ.*] *deflippiana*, from the coast of Peru, having affinities with *P. cooki*, Gray, *P. gavia*, Licht., *P. desolata*, Gmel., and *P. gularis*, Peale;

Æ. [lege *Œ.*] *trinitatis*, from near Trinity Island, belonging to Bonaparte's group *Pterodroma*;

And a *Puffinus*, from the South Atlantic, lat. 43°, long. 9° E., for which the name of *P. elegans* is proposed, should it prove to be a new species.

The diagnostic characters of most of these species are minute, and we feel that if we attempted an abstract of them we might be only misleading our readers.

Puffinus anglorum is figured. J. Gould, B. Gr. Br. pt. xiv.

Nectris fuliginosus and *N. amaurosoma* (Zool. Rec. i. p. 96) are figured. D. G. Elliot, B. N. Am. pt. ix.

Priofinus cinereus and *Æstrelata* (potius *Œstrelata*) *hæsitata* (Kuhl) are figured. *Id. op. cit.* pt. x.

Pelecanidæ.

Milne-Edwards, Alphonse. Note sur l'existence d'un Pélican de grand taille dans les tourbières d'Angleterre. Ann. Sc. Nat. Zoologie, 5e sér. viii. pp. 285–293, pl. 14. (English translation) Ibis, 1868, pp. 363–370. (Abstract) Comptes Rendus, 22 June, 1868, lxvi. pp. 1242–1244; R. Z. 1868, pp. 350–260; Ann. & Mag. N. H. 4th ser. ii. pp. 165, 166.

A bone in the Woodwardian Museum at Cambridge from the peat of the fens of Cambridgeshire proves to be that of a young individual of a large species of *Pelecanus*; but the author hesitates about recognizing it as distinct from *P. onocrotalus*. The specimen exhibited: A. Newton, P. Z. S. 1868, p. 2.

Sclater, P. L. Notes on the Pelicans living in the Society's Gardens. Proc. Zool. Soc. 1868, pp. 264–269, pls. xxv., xxvi.

Six or possibly seven species are named as living as above. These are *Pelecanus onocrotalus*, *P. mitratus*, *P. crispus*, *P. rufescens*, *P. conspicillatus*, and *P. fuscus*, of which the fourth and last are figured, together with portions of the head of the first, second, and fourth. A figure is also given of what Mr. Blyth regards as *P. javanicus*, Horsf., from a Syrian example. Notes on all these as well as on three others not exhibited in the Zoological Gardens are given, and a diagnostic list of the ten species which seem to the author to be well founded.

Pelecanus crispus has occurred for the third time in India. A. Hume, Ibis, 1868, pp. 235–239.

"*Graculus carbo*," from South Africa (Layard, B. S. Afr. p. 380), is *G. lucidus* (Licht.); but possibly *G. carbo* occurs there as well. E. L. Layard, Ibis, 1868, pp. 120, 121.

Tachypetes minor (Gm.)? An example killed at Amoy minutely described. R. Swinhoe, Ibis, 1868, pp. 52–58.

Colymbidæ.

Colymbus glacialis is believed to have bred in Scotland. J. A. H. Brown, Zool. Sec. Ser. pp. 1309, 1310, 1424.

Spheniscidæ.

Notes on the breeding-places of *Aptenodytes pennanti*, *Pygosceles wagleri*, *Eudyptes nigrivestis*, *E. chrysolophus*, and *Spheniscus magellanicus*, and the

great destruction of these birds in the Falkland Islands. A. A. Lecomte, P. Z. S. 1868, pp. 527, 528.

Podicipidæ.

Podiceps micropterus is a new species, from Lake Titicaca in Bolivia, about the size of *P. rubricollis* [sc. *griseigena*], with a very stout bill and crest almost as in *Eudyptes*. It can be distinguished from every *Podiceps* by the extreme shortness of its wing (only 4 inches). J. Gould, P. Z. S. 1868, pp. 220, 221.

Podiceps affinis (Zool. Rec. iii. p. 115), its description translated into German. E. von Martens, J. f. O. 1868, p. 70.

Podiceps pelzelni is figured. H. Schlegel & F. P. L. Pollen, Rech. Faun. Madag. pl. 40.

Podiceps australis is figured. S. Diggles, Orn. Austral. pt. xx.

Alcidæ.

Coues, Elliott. A Monograph of the *Alcidæ*. Philadelphia: 1868. 8vo, pp. 81. [Separately printed from Proc. Acad. N. S. Philad. Jan. 1868*.]

On this treatise the author has undoubtedly spent much time and labour, but without (we think) the same happy result that has almost invariably attended his other works. After a few introductory remarks, he gives a review (in some respects very complete) of the literature relating to the family, and then proceeds to treat of its characters and subdivisions. He makes three subfamilies:—The first, *Alcinæ*, with *Alca* and *Utamania*; the second, *Phaleridinæ* [lege *Phalaridinæ*], including *Fratercula*, *Lunda*, *Ceratorhyncha*, *Sagmatorhina*, *Simorhynchus*, and *Ptychorhamphus*; the third, *Urinæ* [lege *Uriinæ*], containing *Mergulus*, *Synthliborhamphus*, *Brachyrhamphus*, *Uria*, and *Lomvia*. Of each of these groups the characters are concisely given. After this follow descriptions (often extremely minute and illustrated by outline woodcuts of the head) of the species, 33 in number, one of which is given as new, and two or three as somewhat doubtful. There are a few errors in this otherwise extremely valuable Monograph; some of them we have elsewhere noticed. [*Cf.* Ibis, 1868, pp. 483–485.]

Steenstrup, Jap. Matériaux pour servir à l'histoire de l'*Alca impennis* (L.) et Recherches sur les pays qu'il habitait. Bull. Soc. Orn. de la Suisse, tom. ii. 1re partie, pp. 5–70.

This is a French translation of the excellent monograph (Vidensk. Meddel. Naturhist. Forening i Kjöbenhavn, 1855, pp. 33–116) which has afforded help to so many investigators of this bird's history, and indeed was the first attempt to put together the known facts, so as to permit a correct view being taken of it. The work first (A) treats of the appearance of this species in the western waters of the Atlantic, (1) on the coast of Greenland and (2) in the Gulf of St. Lawrence and the Newfoundland seas. Then (B) the same is done with regard to the east side of the Atlantic, beginning with (1) Iceland, and proceeding to (2) the Færoes, (3) the Scotch Islands, and (4) the coast of Norway. A summary of the author's researches (C) on the geographical range of the species is then given, followed by a history (D) of the

* For the reason above given (p. 30, note), we are unable to give the precise reference.

name "Pengwin," and its probable meaning and derivation; and the whole concludes with (E) considerations of the natural affinities of the bird, in the course of which the generic name *Gyralca* [p. 114, note, of the original] is suggested, should it be removed from the genus *Alca*.

The publication of this translation by the Swiss Ornithological Society is greatly to be applauded, for few were able to read the original, published as it was in Danish, though it had already appeared in German, partly in the 'Gelehrten Anzeigen der K. Bayerischen Akademie' (1860), and partly in the 'Bulletin de l'Academie Impériale de St. Pétersbourg' (1863). [*Cf.* Ibis, 1865, p. 228; 1868, p. 342.]

Fatio, Victor. Quelques Mots sur les exemplaires de l'*Alca impennis*, Oiseaux et Œufs qui se trouvent en Suisse. *Tom. cit.* pp. 73–79.

Three specimens of the skin and two of the eggs are described, and the size of the latter expressed according to the formula invented by the author (Zool. Rec. ii. p. 89).

——. Liste des divers représentants de l'*Alca impennis* en Europe, Oiseaux, Squelettes et Œufs. *Tom. cit.* pp. 80–85.

The author enumerates 51 skins, 6 skeletons, and 60 eggs, which is below the mark, as the existence of 65 skins, 5 skeletons nearly complete (besides detached bones of at least 20 other individuals), and 61 eggs, in Europe alone, is known with certainty to us, this computation not including some specimens mentioned by him.

Alca impennis, notes on:—Worm's account and Thienemann's egg, R. Kœnig-Warthausen, J. f. O. 1868, p. 247. Date of its supposed extinction, E. Newmann, Zool. S. S. pp. 1354, 1483. General notes, and correction of Thompson's account (B. Irel. iii. pp. 238, 239) of the Irish specimen, J. H. Gurney, jun., *tom. cit.* pp. 1442–1453. Its remains found in kitchen-middens in Maine and Massachusetts: J. Wyman, Am. Nat. 1868, pp. 561–584, and 622. [*Cf.* Ibis, 1869, p. 239.]

Mergulus alle is figured. J. Gould, B. Gr. Br. pt. xiv.

Uria craveri (Zool. Rec. iii. p. 115), its description translated into German. E. von Martens, J. f. O. 1868, p. 70.

Phalaris psittacula was taken alive in Sweden in Dec. 1860! [F. Wahlgren,] Jägareförbundets nya Tidskrift, 1867, p. 108; L. Olph-Galliard, R. Z. 1868, pp. 95, 96; C. J. Sundevall, Ibis, 1869, p. 221.

Simorhynchus cassini is a new species from Russian America, allied to *S. tetraculus*, but smaller, with the bill exceedingly compressed, and probably no crest. It is of a lead-colour, lighter below, and whitish on the abdomen. E. Coues, Monogr. *Alcidæ*, pp. 35, 45–46.

STRUTHIONES.

Struthionidæ.

Struthio australis, from South Africa, is now formally recognized as distinct from the northern *S. camelus*, L., the differences having been pointed out by Mr. Sclater (Trans. Zool. Soc. iv. p. 354). J. H. Gurney, Ibis, 1868, pp. 253, 254.

Struthio camelus, particulars of its domestication in Algeria, from 1862 to 1867 inclusive. A. Hardy, Bull. Soc. Imp. d'Acclimat. 1868, pp. 103–109.

On the rearing of it in the same country, C. Rivière, *tom. cit.* pp. 639-645. Notes on it in North-eastern Africa, M. Marno, Zool. Garten, 1868, pp. 212–216. Its anatomy described in considerable detail, A. Macalister, Proc. R. Irish Acad. ix. pp. 1–24. The description of the muscular mechanism of its leg (Zool. Rec. ii. pp. 85, 138) reprinted, with figures, S. Haughton, *tom. cit.* pp. 50–61.

Rheidæ.

Struthio rhea (sc. *Rhea americana*), its muscular anatomy described. S. Haughton, Proc. R. Irish Acad. ix. pp. 497–504.

Casuariidæ.

Casuarius australis (*cf.* Zool. Rec. iii. p. 116, and iv. p. 125), a very fine specimen from Queensland exhibited, and the characters in which it differs from *C. galeatus* pointed out. P. L. Sclater, P. Z. S. 1868, pp. 376, 377. Seen at Rockingham Bay, E. P. Ramsay, *tom. cit.* p. 388.

Dromæus irroratus, its breeding in England. A. W. Bennett, Bull. Soc. Imp. d'Acclimat. 1868, pp. 682–688 [translated from 'Land and Water,' 2 May, 1868.]

Dromæus novæ-hollandiæ, its muscular anatomy described. S. Haughton, Proc. R. Irish Acad. ix. pp. 487–497.

Dinornithidæ.

Dinornis elephantopus, *D. rheides*, *D. crassus*, and *D. casuarinus*. Remarks on the sternum of these species to be subsequently published in the 'Zoological Transactions.' R. Owen, P. Z. S. 1868, p. 404.

Dinornis giganteus, *D. robustus*, *D. elephantopus*, *D. crassus*, *D. gracilis*, *D. casuarinus*, and *D. didiformis*, their skeletons in the Museum at Christchurch, New Zealand. J. Haast, J. f. O. 1868, pp. 244, 245. [*Cf.* Ibis, 1868, p. 504.]

Dinornis, geological note on a deposit containing its remains, with a section. *Id.* Monatsb. Akad. Wissensch. Berl. 1868, pp. 551–553.

Æpyornithidæ.

Bianconi, G. G. Appendice alla memoria intorno agli scritti di Marco Polo ed all' *Æpyornis maximus*. Mem. Accad. Sc. Bologna, 20 Marzo, 1868, pp. 483–520.

This appendix to a paper we before noticed (Zool. Rec. ii. p. 82) treats almost entirely of the veracity of Marco Polo's celebrated account of the "Roc," which the author maintains was the *Æpyornis* and a Vulture.

Æpyornis maxima, a tibia 64 centimètres long, and some portions of a larger one, a femur, several vertebræ, and the fragment of an egg, discovered by M. A. Grandidier, exhibited. H. Milne-Edwards, Comptes Rendus, 14 Dec. 1868, lxvii. pp. 1165–1167; R. Z. 1868, pp. 468, 469.

Apterygidæ.

Apteryx mantelli, a male bird in the Zoological Gardens incubated two eggs, which came to nothing. A. D. Bartlett, Ibis, 1868, pp. 251, 504, P. Z. S. 1868, p. 329; Bull. Soc. Imp. d'Acclimat. 1868, pp. 536, 537.

Apteryx owenii in confinement. P. L. Sclater, P. Z. S. 1868, p. 319.

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, and iv. p. 126. We have received in the year 1868 five other parts of plates, viz. Nos. 25–29, but no continuation of the text.

CARUS, J. V., und GERSTÄCKER, C. E. A. Handbuch der Zoologie. Wirbelthiere von J. V. Carus. Band i. Leipzig, 1868, 8vo.

This work has been noticed above, p. 3.

B. *Papers published in Journals.*

BALLION, E. *Ranodon kessleri.* Ein neuer Wassermolch aus dem südlichen Theile Westsibiriens. Bull. Soc. Nat. Mosc. 1868, i. pp. 138–143.

BOCOURT, —. Description de quelques Chéloniens nouveaux appartenant à la Faune Mexicaine. Ann. Sc. Nat. 1868, x. pp. 121–122.

——. Descriptions de quelques Crotaliens nouveaux appartenant au genre *Bothrops* recueillis dans le Guatémala. Ibid. pp. 201 202.

COPE, E. D. An examination of the Reptilia and Batrachia obtained by the Orton Expedition to Ecuador and the Upper Amazon, with notes on other species. Proc. Ac. Nat. Sc. Philad. 1868*, pp. 96–119.

——. Additional descriptions of Neotropical Reptilia and Batrachia not previously known. Ibid. pp. 119–138.

CORNALIA, —. Gli Axolots del Museo Civico di Milano. Rendic. Ist. Lomb. Sc. e Lett. 1868, pp. 383–388.

* For this and the following paper we are indebted to the author, the journal quoted not having been received in this country up to the present time (May 1869).

Gouriet, E. Essai sur la classification parallélique des Batraciens ou Amphibiens. Rev. et Mag. Zool. 1868, pp. 199–210.

Günther, A. First account of species of Tailless Batrachians added to the collection of the British Museum. Proc. Zool. Soc. 1868, pp. 478–490, with four plates.

——. Sixth account of new species of Snakes in the collection of the British Museum. Ann. & Mag. Nat. Hist. 1868, i. pp. 413–429, with three plates.

Gundlach, J. Revista y Catalogo de los Reptiles Cubanos. Repert. Fis.-nat. de Cuba, ii. 1867, pp. 102–119.

Hensel, R. Beiträge zur Kenntniss der Wirbelthiere Süd-Brasiliens. Wiegm. Arch. 1868, pp. 323–356. [Contributions to the knowledge of the Vertebrates of Southern Brazil.]

Continuation, see Zool. Record, iv. p. 129.

Huxley, Th. On the animals which are most nearly intermediate between Birds and Reptiles. Roy. Instit. Great Brit. 1868, Febr. 7, pp. 10; or Ann. & Mag. Nat. Hist. 1868, ii. pp. 66–75.

Prof. Huxley demonstrates that the gap between Birds and Reptiles, as indicated by differences in the osseous system, is lessened when fossil forms are taken into consideration (*Dinosauria* and *Compsognathus*).

Keferstein, W. Beschreibung einiger neuen Batrachier aus Australien und Costa Rica. Nachricht. Ges. Wiss. Götting. 1868, pp. 326–332 (August 12th).

A portion of this paper, as well as of one published last year (see Zool. Record, iv. p. 129), is reproduced in Wiegm. Arch. 1868, pp. 291–300, pls. 8 and 9.

——. Ueber die Batrachier Australiens. Wiegm. Arch. 1868, pp. 253–290, with four plates.

Krefft, G. Notes on Australian Zoology. Proc. Zool. Soc. 1868, pp. 2–4.

Marsh, O. C. Observations on the metamorphosis of *Siredon* into *Amblystoma*. Sillim. Journ. 1868, vol. xlvi. pp. 364–374, with a plate.

Mivart, St. G. On *Pachybatrachus robustus*, a new genus of Anurous Batrachians. Proc. Zool. Soc. 1868, pp. 557–560, with woodcut.

Peters, W. Ueber einige neue oder weniger bekannte Amphibien. Monatsber. Ak. Wiss. Berlin, 1868, pp. 449–453, with a plate, pp. 640–642.

Putnam, F. W. Do Snakes swallow their young? Amer. Natur. ii. 1868, pp. 133–143.

Strauch, A. Bemerkungen über die Eidechsen-Gattung *Scapteira* (Fitz.). Bull. Ac. Sc. St. Pétersb. xii. pp. 313–328; or Mél. Biol. iv. 1867, pp. 403–426.

——. Ueber Eichwald's *Tomyris oxiana*, eine Giftschlange aus der Familie der Elapiden. *L. c.* 1° xiii. pp. 81–94; or *l. c.* 2° vi. 1868, pp. 636–654.

——. Ueber die Arten der Eidechsen-Gattung *Ablepharus* (Fitz.). *L. c.* 1° xii. pp. 359–371; or *l. c.* 2° vi. pp. 553–570.

——. Ueber Adanson's Crocodile noir. Entgegnung auf Dr. J. E. Gray's gleichnamige Notiz. *L. c.* 1° xiii. 1868, pp. 51–60; or *l. c.* 2° vi. pp. 622–635.

Theobald, W. Catalogue of the Reptiles of British Birma, embracing the Provinces of Pegu, Martaban, and Tenasserim, with descriptions of new or little-known species. Journ. Linn. Soc. Zool. 1868, x. pp. 4–67.

C. *Anatomical and Physiological Publications.*

Filippi, F. de. Sulla struttura della cute dello *Stellio caucasicus*. Mem. Accad. Sc. Torin. xxiii. pp. 363–373, with a plate.

Fleischl, E. Ueber den Bau der sogenannten Schilddrüse des Frosches. Sitzgsber. Ak. Wiss. Wien, lvii. 1868, pp. 75–78, with a plate. [On the structure of the so-called *glandula thyroidea* of the Frog.]

Hasse, C. Die Histologie des Bogenapparates und des Steinsacks der Frösche. Zeitschr. wiss. Zool. 1868, pp. 77–94, with two plates. [Histology of the semicircular canals and otolithic capsule of Frogs].

——. Das Gehörorgan der Frösche. Ibid. pp. 359–420, with three plates. [The organ of hearing of Frogs.]

Haughton, S. On the muscular anatomy of the Alligator. Ann. & Mag. Nat. Hist. 1868, i. pp. 282–292, with a plate.

Jones, Th. W. On the phenomena observed to attend the propulsion of lymph from one of the lymphatic hearts into a vein in the Frog. Proc. Roy. Soc. 1868, pp. 335–336 (abstract).

——. Microscopical characters of the rhythmically contractile muscular coat of the lymphatic hearts of the Frog. Ibid. p. 342 (abstract).

Klein, — von. Vergleichende Beschreibung des Schädels der Wirbelthiere. Württemb. ntrw. Jahresh. 1868, pp. 71–171. [Comparative description of the Skull of Vertebrates.]

Langer, C. Ueber das Lymphgefässsystem des Frosches. III. Die Lymphgefässe im Schwanze der Batrachier-Larven. Sitzgsber. Ak. Wiss. Wien, 1868, lviii. pp. 198–210, with a plate. [On the system of lymph-vessels of the Frog. III. The lymph-vessels in the tail of the tadpoles.]

Leydig, F. Ueber Organe eines sechsten Sinnes. Zugleich als Beitrag zur Kenntniss des feineren Baues der Haut bei Amphibien und Reptilien. Nov. Act. Leopold. xxxiv. 1868, pp. 108, with five plates. [On the organs of a sixth sense. A contribution to the knowledge of the minute structure of the cutis in Amphibians and Reptiles.]

——. Ueber die Schleichenlurche (*Cæciliæ*). Ein Beitrag zur anatomischen Kenntniss der Amphibien. Zeitschr. wiss. Zool. 1868, pp. 280–300, with two plates.

Lunel, G. Sur deux cas de Polymélie (Membres surnuméraires) observés chez la *Rana viridis* seu *esculenta* (L.). Mém. Soc. Phys. et Hist. Nat. Genève, 1868, xix. pp. 305–312, with a plate.

See on the same subject, Duméril, A., Zool. Record, iii. p. 119.

Miklucho-Maclay. Beitrag zur vergleichenden Anatomie des Gehirns. Jena. Zeitschr. 1868, iv. pp. 553–569, with woodcuts. [Contribution to the comparative anatomy of the Brain.]

Parker, W. K. A Monograph of the Structure and Development of the Shoulder-girdle and Sternum in the Vertebrata. London, 1868, 4to, p. 237, with thirty plates. Published by the Ray Society.

Peters, W. Ueber die Gehörknöchelchen und den Meckel'schen Knorpel bei den Crocodilen. Monatsber. Ak. Wiss. Berlin, 1868, pp. 592–598. [On the auditory ossicles and Meckel's cartilage in Crocodilians.]

Plateau, F. Sur la vision des Poissons et des Amphibies. Mém. Cour. Ac. Roy. Belg. xxxiii. p. 45, with a plate.

Ruedinger, —. Die Muskeln der vordern Extremitäten der Reptilien und Vögel. Haarlem, 1868, 4to, with fifteen plates.

General Notes and Faunæ.

Prof. Peters has found further evidence in confirmation of the view that the *os tympanicum* of Mammals, and not the *malleus* and *incus*, is homologous with the *os quadratum* of Birds and Reptiles (see Zool. Record, iv. p. 40). He describes the condition and extent of Meckel's cartilage in very young and embryonic Crocodilians; it is continued into a dilated lamina, which is the *malleus*. The same connexion between the tympanic

cavity and the foramen pneumaticum of the mandible was traced by the author in embryos of Birds. Monatsber. Ak. Wiss. Berlin, 1868, pp. 592–598.

According to the 'Report of the Council of the Zoological Society of London' (London, 1868), 173 reptiles were living in the Menagerie in the course of the year 1867, two species (*Cyclodus gigas* and *Crotalus durissus*) having bred.

Palestine. For the present we have only shortly to refer to a paper on the Fauna of Palestine, by Mr. Tristram, an abstract of which appeared in Proc. Roy. Soc. 1868, p. 316.

Réunion. It would appear, from notes published by Dr. Vinson, that the reptiles (chiefly Tortoises) indigenous to this island are now extinct, or replaced by others imported from other islands. Bull. Soc. Acclim. Paris, 1868, pp. 587–590.

Zanzibar. Dr. Günther enumerates or describes 11 species of snakes occurring in the island. Ann. & Mag. Nat. Hist. 1868, i. p. 413.

Birma. Mr. Theobald has collected for several years in this part of India (we use the term in the meaning applied to it in Europe for centuries), as well as in Pegu, Martaban, and Tenasserim, considerably adding to our previous knowledge of the herpetology of these countries. In a paper published in Journ. Linn. Soc. x. pp. 4–67, he describes or makes notes on 20 species of Tortoises, 39 Saurians, and 64 Ophidians.

Island of Poulo Condor. M. Jouan mentions 3 Lizards, 1 *Epicrium*, and 4 Snakes from this island. Mém. Soc. Sc. Nat. Cherbourg, xiii. 1868, pp. 283–286.

Ecuador and Upper Amazon. Mr. Cope has described the Reptiles and Batrachians collected by an expedition which was undertaken under the auspices of the Smithsonian Institution. The collection contained 3 Tortoises, 20 Saurians, 34 Ophidians, and 16 Batrachians, altogether 73 species, of which the author believes 24 to be undescribed. Proc. Ac. Nat. Sc. Philad. 1868, pp. 96–119.

River Amazons. J. M. da Silva Coutinho treats of the Tortoises of the Amazons region, entering into their natural history; he distinguishes, by vernacular names, six species of *Podocnemis*, *Chelys matamata*, and three species of *Testudo*. Bull. Soc. Acclim. Paris, 1868, pp. 147–166.

Southern Brazil. Dr. Hensel gives descriptions of, or remarks on, 22 Snakes, 10 Saurians, and 2 Tortoises collected by him in the province S. Pedro do Rio Grande do Sul. Wiegm. Arch. 1868, pp. 323–356.

West Indies. Mr. Cope enumerates five Reptiles from the Island of Navassa, and ten from Gonave Island near Hayti. Proc. Ac. Nat. Sc. Philad. 1868, pp. 126, 127.

Cuba. Dr. Gundlach has given a list of the species known at present from Cuba, stating the exact localities where they are found. He enumerates 1 *Emys*, 4 *Chelonia*, 1 *Sphargis*, 2 *Crocodilus*, 1 *Ameiva*, 4 *Liocephalus*, 1 *Cyclura*, 16 *Anolis*, 1 *Platydactylus*, 1 *Hemidactylus*, 3 *Sphæriodactylus*, 1 *Gymnodactylus*, 1 *Cricosaura*, 1 *Diploglossus*; 1 *Amphisbæna*, 1 *Typhlops*, 3 *Ungalia*, 1 *Epicrates*, 1 *Uroteca*, 1 *Cryptodactus*, 2 *Arrhyton*, 1 *Colorhogia*, 4 *Dromicus*, 1 *Tretanorhinus*, 1 *Tropidonotus*. In these numbers also those species are included which the author regards as doubtful. Repert. Fis.-nat. de Cuba, ii. pp. 104–117.

Dr. Gundlach has also given a list of the Batrachians known at present from Cuba, stating the exact localities where they are found. He enumerates 2 *Bufo*, 2 *Phyllobates*, (1) 3 *Trachycephalus*, and 5 *Hylodes*. Ibid. pp. 117–119.

Australia. Dr. Keferstein has written on Australian Frogs. Nachricht. Ges. Wiss. Götting. 1868, p. 326, and Wiegm. Arch. 1868, pp. 253–290.

Tasmania. Mr. Krefft, in his "Notes on the Fauna of Tasmania" (see p. 6), mentions 6 Lizards, 3 Snakes, and 7 Frogs.

CHELONIA.

Testudo. Mr. Theobald describes *T. elongata* and *T. platynotus*. Journ. Linn. Soc. x. pp. 6, 7.

Emys. Notes on *E. trijuga* and *E. crassicollis* by Mr. Theobald, *l. c.* pp. 13, 14. He believes *Emys berdmorei* to be distinct from *E. ocellata*, p. 16.

Emys decussata is stated by Dr. Gundlach to be the female of *E. rugosa*. Repert. Fis.-nat. de Cuba, ii. p. 104. J. Vilaró says that this requires further proof, *Emys jamao* being probably a second Cuban species. Ibid. pp. 119, 228.

Emys incisa and *Emys grayi*, spp. nn., Bocourt, Ann. Sc. Nat. 1868, x. p. 121, from Central America.

Geomyda grandis. Notes by Mr. Theobald, *l. c.* p. 11.

Cyclemys. Mr. Theobald states that the sternum has a perfectly mobile suture; he describes *C. oldhami*, which he considers to be the adult state of *C. orbiculata*. *L. c.* p. 12.

Batagur trivittatus described by Mr. Theobald, *l. c.* p. 14.

Dermatemys. Mr. Cope observes that in this genus the vertebral elements are not prolonged to the posterior marginal bones. He distinguishes three species, viz. *mavei*, *berardi*, and *abnormis*, sp. n., from Belize. Proc. Ac. Nat. Sc. Phil. 1868, pp. 119, 120.

Chelydra serpentina reaches as far southwards as Guayaquil, Cope, *l. c.* p. 96.—*Emysaurus rosignonii* is described as a new species from Guatemala by Bocourt, Ann. Sc. Nat. 1868, x. p. 121.

Claudius megalocephalus is described as a new species from Mexico by Bocourt, *l. c.* p. 122.

Podocnemis expansa. An account of its natural history is given by Silva Coutinho in Bull. Soc. Acclim. Paris, 1868, pp. 156–166.

Sternothærus has ten bones in the plastron, instead of eight, Cope, *l. c.* p. 119.

Platemys geoffreyana described by Hensel, Wiegm. Arch. 1868, p. 350.

Hydraspis gordoni is described as a new species from Trinidad by Dr. Gray, Proc. Zool. Soc. 1868, p. 563, pl. 42.

Chelodina maximiliani. Notes by Hensel, Wiegm. Archiv, 1868, p. 355.

Chelodina oblonga is not found in Victoria, but a true western species. Krefft, Proc. Zool. Soc. 1868, p. 2.

Trionyx phayrei is described as a new species from Arakan by Mr. Theobald, *l. c.* p. 18.

Emyda scutata, sp. n., Peters, Monatsber. Ak. Wiss. Berlin, 1868, p. 449, Pegu.

Chelonia agassizii is believed to be a new species from the Pacific coast of Central America, by Bocourt, Ann. Sc. Nat. 1868, x. p. 122.

CROCODILIA.

Crocodilus. Dr. Gray continues to believe that Adanson's "Black Crocodile" is *C. frontatus*, and not *C. cataphractus*, Ann. & Mag. Nat. Hist. 1868, i. p. 75 [see Zool. Record, iii. p. 122].—Dr. A. Strauch explains in detail the reasons why he refers Adanson's "Crocodile noir" to *C. cataphractus*, and not to *C. frontatus*, and states that Adanson's "*Gavial* du Sénégal," which is the *C. biscutatus* (Cuv.), is, in fact, an American species, and identical with *C. acutus*. Bull. Ac. Sc. St. Pétersb. xiii. pp. 51–60, or Mélang. Biol. vi. pp. 622–635.

Notes on *Crocodilus palustris* and *C. porosus* by Mr. Theobald, Journ. Linn. Soc. x. pp. 20, 21.

Alligator latirostris. Notes by Dr. Hensel, Wiegm. Arch. 1868, p. 348.

Alligator mississipensis. The Rev. S. Haughton has described the myology in Ann. & Mag. Nat. Hist. 1868, i. pp. 282–292, pl. 10.

LACERTILIA.

Amphisbæna. Dr. Hensel describes *A. vermicularis* and *A. kingii*. Wiegm. Arch. 1868, pp. 339, 343.

Amphisbæna punctata. Notes on a living example by J. Vilaró, in Rep. Fis.-nat. de Cuba, ii. 1867, pp. 69–72.

Ameiva trilineata (Gray) is said to be a variety of *A. auberi* (Coct.). Gundlach, Repert. Fis.-nat. de Cuba, ii. p. 168.

Ameiva petersii, sp. n., Cope, Proc. Ac. Nat. Sc. Philad. 1868, p. 99, from the Upper Amazons.—*Ameiva chrysolæma*, sp. n., Cope, *l. c.* p. 127, from Gonave Island, near Hayti.

Centropyx pelviceps, sp. n., Cope, *l. c.* p. 98, Upper Amazons.

Podarces. Dr. Strauch has published a short but excellent paper on those species of the genus which might be referred to *Scapteira*, which division proves to be untenable as a genus. He gives a synopsis of the genera belonging to the group *Pristidactylia*, and describes *P. grammica* (Licht.), *P. cuneirostris*, sp. n., from South Africa (?), *P. reticulata* (Bocage), and *P. scripta*, sp. n., from Central Asia. Mél. Biol. iv. 1867, pp. 403–426, or Bull. Ac. Sc. St. Pétersb. xii. pp. 313–328.

Ophiognomon, g. n. Chalcidid., Cope, Proc. Ac. Nat. Sc. Philad. 1868, p. 100. Nostril on the suture between the first labial and supranasal. Head-shields, above, five, viz. two supranasals, one frontal, and two occipitals. Limbs minute, four, without digits. Scales smooth. No collar.—*O. trisanale*, sp. n., from the Upper Amazons.

Ablepharus. Dr. Strauch has critically examined the lizards of this genus; he very properly unites with it *Cryptoblepharus* and *Morethia*. The species known are described, and two new ones added, viz. *A. deserti*, from Central Asia, and *A. brandtii* from Buchara. Bull. Ac. Sc. St. Pétersb. xii. pp. 359–371; or Mél. Biol. vi. pp. 553–570. [The author has overlooked *A. cabindæ*, Bocage.]

Euprepes. Notes on *Eu. rufescens* and *Eu. multicarinatus* (Kuhl, = *maculatus*, Blyth), by Mr. Theobald, Journ. Linn. Soc. x. pp. 25, 26.

Euprepes (*Mabuya*) *niger* (Hombr. & Jaq.) characterized by Peters, Monatsber. Ak. Wiss. Berlin, 1868, p. 449.

Riopa anguina is described as a new species from Pegu, by Mr. Theobald, *l. c.* p. 27.

Tropidophorus berdmorei, described by Mr. Theobald, *l. c.* p. 24.

Celestus. Mr. Cope gives a synopsis of thirteen species, of which *C. degener*, from Porto Rico, *C. phoxinus*, from Hayti, *C. weinlandii*, from Gonave Island, *C. badius*, from Navassa Island, and *C. impressus*, from Jamaica, are described by him for the first time. Proc. Ac. Nat. Sc. Philad. 1868, pp. 123–127.

Diploglossus monotropis (Wiegm.) = *Camilia jamaicensis* (Gray), Cope, *l. c.* p. 98; this lizard is from Ecuador, and not from Jamaica.

Doryura. Mr. Theobald refers Blyth's *Leiurus berdmorei* to this genus, and adds as new species *D. guadama* and *D. karenorum*, from Pegu. *L. c.* pp. 29, 30.

Hemidactylus mortoni is described as a new species from Rangoon, by Mr. Theobald, *l. c.* p. 32.—*Hemidactylus variegatus*, sp. n., Peters, Monatsber. Ak. Wiss. Berlin, 1868, p. 449, Zanzibar.—*Hemidactylus guineensis*, sp. n., Peters, *l. c.* p. 640, Guinea.

Teratoscincus (Strauch, see Zool. Record, i. p. 111) proves to be a Geckoid near *Stenodactylus*. Strauch, Mél. Biol. vi. p. 554.

Anolis porcus (Cope) probably = *A. fernandinæ* (Coct.), and *A. isolepis* (Cope) probably = *A. angusticeps* (Hallow.). Gundlach, *l. c.* pp. 109, 111.

Anolis ortonii, sp. n., Cope, *l. c.* p. 97, Upper Amazons.

Euspondylus strangulatus, sp. n., Cope, *l. c.* p. 99, Upper Amazons.

Proctotretus prasinus, sp. n., Cope, *l. c.* p. 120, Chili.

Liocephalus. Mr. Cope gives a synopsis of fourteen species, of which *L. eremitus* from the island of Navassa, West Indies, is described by him for the first time, *l. c.* pp. 121–123.—*Liocephalus macropus* and *raviceps* (Cope) are said to be probably varieties of colour of *L. vittatus* (Hallow.). Gundlach, Repert. Fis.-nat. de Cuba, ii. p. 108.

Stellio caucasicus. Prof. de Filippi's examination of the cutis of this lizard has been mentioned in Zool. Record, iii. p. 124; the paper is published in Mem. Accad. Sc. Torin. xxiii. pp. 363–373, with a plate.

Uromastyx and *Liolepis* form a distinct family, because they are "herbivorous," *Uromasticidæ*, Theobald, *l. c.* p. 34.

Liolepis reevesii is terrestrial and not arboreal. Theobald, *l. c.* p. 34.

Moloch horridus. Notes on this animal by Mr C. A. Wilson. Journ. Linn. Soc. x. 1868, pp. 69–73.

Chamæleo ventralis. Dr. J. A. Smith gives a description of the colours of an example of this species. Proc. R. Phys. Soc. Edinb. 1865–66, pp. 390–392.

Chamæleo kerstenii, sp. n., Peters, Monatsber. Ak. Wiss. Berlin, 1868, p. 449, from Wanga.

OPHIDIA.

Dr. Günther has published his sixth annual account of new species of Snakes in the collection of the British Museum. The total number of species in that collection amounts now to 863, and that of the typical specimens to 330. Ann. & Mag. Nat. Hist. 1868, i. p. 413.

Mr. Putnam is inclined to credit the statement of numerous persons who have seen young Snakes taking refuge in the throat of their mother. Amer. Natur. ii. p. 132.

Mr. Putnam gives some notes relating to the time of breeding, and the number of eggs to a brood of North-American Snakes. Ibid. pp. 133, 134.

Typhlopidæ.

Typhlops diardii. Notes by Peters, Monatsber. Ak. Wiss. Berlin, 1868, p. 450.

Typhlops (*Ophthalmidion*) *elegans*, sp. n., Peters, *l. c.* fig. 1, from Ilha de Principe (West Africa).

Typhlops sulcatus, sp. n., Cope, Proc. Ac. Nat. Sc. Philad. 1868, p. 128, Navassa Island, West Indies.

Tortricidæ.

Cylindrophis is stated to be viviparous. Günther, Ann. & Mag. Nat. Hist. 1868, i. p. 428.

Xenopeltidæ.

Xenopeltis unicolor. Notes by Mr. Theobald, Journ. Linn. Soc. x. p. 37.

Uropeltidæ.

Plectrurus trilineatus (Beddome). Dr. Günther regards this as the type of a distinct genus, *Platyplectrurus*, differing from *Plectrurus* by having a long tail, with a double series of subcaudals, and with the edge of the terminal shield horizontal and one-pointed. Head flat, obtuse. Ann. & Mag. Nat. Hist. 1868, i. p. 414.

Silybura grandis (Beddome) intermediate between *Silybura* and *Rhinophis*. Günther, *l. c.*

Calamaridæ.

Geophis. Mr. Cope describes as new *Colophrys rhodogaster* (g. et sp. n.), Proc. Ac. Nat. Sc. Philad. 1868, p. 130, and *Catostoma nasale*, p. 131, both from Guatemala.

Rhabdosoma microrhynchum, sp. n., Cope, *l. c.* p. 102, Guayaquil.

Geophis latifrons, sp. n., Günther, Ann. & Mag. Nat. Hist. 1868, i. p. 415, pl. 19. figs. B, from the Upper Amazons.—*Geophis bicolor*, sp. n., Günther, *l. c.* p. 416, from Mexico.

Xenocalamus, g. n. Calamar., Günther, *l. c.* p. 414. Body cylindrical, elongate; tail short; head long, depressed, narrower than the neck. Eye extremely small, with round pupil; rostral large, conically produced, the mouth being quite at the lower side of the head; one pair of frontals; vertical enormous; occipitals small; nostril between two shields; loreal none; scales smooth, without apical groove, in seventeen series; anal and subcaudals paired. Maxillary teeth few in number, smooth; palate without teeth.—*Xenocalamus bicolor*, sp. n., Günther, *l. c.* p. 415, pl. 19. figs. A, from the Zambezi.

Oligodontidæ.

Simotes. Dr. Günther describes three new species from Pegu, Ann. & Mag.

Nat. Hist. 1868, i., viz. *S. amabilis*, p. 416, pl. 17. fig. A, *S. cruentatus* and *S. theobaldi*, p. 417.

Colubridæ.

Arrhyton fulvum (Cope) is probably a variety of *A. tæniatum* (Gthr.). Gundlach, Repert. Fis.-nat. de Cuba, ii. p. 116.

Ablabes. Mr. Theobald describes *Coronella scripta* (Blyth) from Martaban. Journ. Linn. Soc. x. p. 42.

Ablabes bistrigatus, sp. n., Günther, *l. c.* p. 417, Pegu.

Ablabes. Mr. Cope describes *Enicognathus* (*Rhadinæa*) *melanocephalus* from Guadeloupe; he says that Duméril has confounded three species under this name, *l. c.* p. 132.

[*Ablabes*] *Rhadinæa chrysostoma*, sp. n., Cope, *l. c.* p. 104, Upper Amazons.

Lygophis nicagus, sp. n. (= *Enicognathus melanocephalus*, Jan), Cope, *l. c.*

Tachymenis canilatus, sp. n., Cope, *l. c.* p. 104, Guayaquil.

Cyclophis nebulosus, sp. n., Günther, *l. c.* p. 418, Japan.

Coronella austriaca oviviparous. Erber, Verh. zool.-bot. Ges. Wien, 1868, p. 907.

[*Liophis*] *Aphcomorphus alticolus*, sp. n., Cope, Proc. Ac. Nat. Sc. Philad. 1868, p. 102, Quito.

Liophis pygmæus, sp. n., Cope, *l. c.* p. 103, Upper Amazons.

Liophis lateristriga (Berthold) is referred to *Dromicus* by Cope, *l. c.* p. 103.

Erythrolamprus ocellatus, sp. n., Peters, Monatsber. Ak. Wiss. Berlin, 1868, p. 642; hab. —?

Coluber nuthalli is described as a new species from Pegu by Mr. Theobald, *l. c.* p. 44.

Masticophis pulchriceps, sp. n., Cope, Proc. Ac. Nat. Sc. Phil. 1868, p. 105, Quito.—*Masticophis melanolomus*, sp. n., Cope, ibid. p. 134, Yucatan.

Spilotes grandisquamis, sp. n., Peters, Monatsb. Ak. Wiss. Berlin, 1868, p. 451, from Costa Rica.—The same author describes a variety of *Spilotes corais* from Caracas, ibid. p. 641.

Spilotes piceus, sp. n., Cope, *l. c.* p. 105, Upper Amazons.

Elaphis pardalinus, sp. n., Peters, *l. c.* p. 642, hab. —?

Dromicus. Messrs. Jan and Sordelli have figured species of this genus under the following names:—Livr. 25, pl. 1. *D. antillensis* and *elegans*; pl. 2. *D. leucomelas* and *boursieri*; pl. 3. *D. rufiventris* and *protenus* (Jan).

Dromicus viperinus, sp. n., Günther, Ann. & Mag. Nat. Hist. 1868, i. p. 418, from the Upper Amazons.—*Dromicus laureatus*, sp. n., Günther, *l. c.* p. 419, pl. 19. fig. E, from Mexico.

Herpetodryas occipitalis, sp. n., Günther, *l. c.* p. 420, Upper Amazons.

Herpetodryas (*Drymobius*) *reissii*, sp. n., Peters, Monatsber. Ak. Wiss. Berlin, 1868, p. 640, Guayaquil.

Philodryas tæniatus, sp. n., Hensel [Peters?], Wiegm. Arch. 1868, p. 331, from Southern Brazil.

Xenodon. Mr. Cope refers *Liophis bicinctus* to this genus, and describes *X. suspectus* as a new species from Brazil, *l. c.* p. 133.

Xenodon rhabdocephalus described by Dr. Hensel, *l. c.* p. 325. [The supposition of the author that *X. irregularis* ought to be referred to this species is not correct.]—*Xenodon neuwiedii* described, ibid. p. 328.

Tropidonotus. Messrs. Jan and Sordelli have figured the following species:—

No. 25, pl. 4. *T. sirtalis,* varr.; pl. 5. *T. lateralis* (Berthold) and *collaris* (Jan); pl. 6. *T. viperinus.*

No. 26, pls. 1 & 2. *T. natrix,* varr., and *saurita*; pl. 3. *T. fasciatus*; pl. 4. *T. woodhousi* and *rhombifer*; pls. 5 & 6. *T. taxispilotus* and *cyclopion.*

No. 27, pl. 1. *T. quincunciatus*; pl. 2. *T. spilogaster* and *triangudigerus*; pls. 3 & 4. *T. subradiatus* (Jan) and *picturatus*; pl. 5. *T. leberis* and *mesomelanus* (Jan); pl. 6. *T. clarkii* and *mesomelanus.*

No. 29, pl. 1. *Amphiesma substolatum, tigrinum,* and *subminiatum*; pl. 2. *A. platyceps* and *rhodomelas*; pl. 3. *A. flaviceps* [D. & B. = *T. leucomelas* of Günther, who did not recognize the species from Duméril's description of the colours] and *A. brachyurum* (Jan) [= *T. plumbicolor,* Cantor].

Tropidonotus swinhonis, sp. n., Günther, Ann. & Mag. Nat. Hist. 1868, i. p. 420, pl. 19. fig. F, from Formosa.

Tropidonotus punctulatus (Gthr.) proves to be a native of Pegu, Günther, *l. c.*

Mr. Cope describes *Eutænia phenax* as a new species from Vera Cruz, *l. c.* p. 134.

Homalopsidæ.

Hemiodontus leucobalia (Schleg.), *H. chalybæus* (Jan), and *Cantoria elapiformis* (Ptrs.) are figured by Messrs. Jan and Sordelli, no. 28, pl. 6.

Fordonia bicolor is described as a new species from Rangoon by Mr. Theobald, *l. c.* p. 56.

Ferania sieboldi is figured by Messrs. Jan and Sordelli under the name of *Hypsirhina bocourti, l. c.* pl. 5. fig. 2.

Hypsirhina albomaculata (D. & B.) figured by Jan and Sordelli, *l. c.* fig. 1.

Tytleria is the name of a supposed new genus, of the aspect of *Hypsirhina,* proposed by Mr. Theobald. Nine upper labials; two pairs of frontals; scales smooth, in 17 rows. *T. hypsirhinoides,* sp. n., Theobald, *l. c.* p. 49, from the Andaman Islands.

Gerarda bicolor (Gray) proves to be a native of Pegu, Günther, Ann. & Mag. Nat. Hist. 1868, i. p. 421.

Helicops. Messrs. Jan and Sordelli have figured species of this genus under the following names:—Livr. 28, pl. 2. *H. agassizi* (Jan) and *spixii* (Jan); pl. 3. *H. scalaris* (Jan), *leopardinus* (Schleg.), and *infratæniatus* (Jan); pl. 4. *H. angulatus* and *leprieurii.*

Calopisma. Messrs. Jan & Sordelli figure the following species:—Livr. 29, pls. 4–6. *C. martii, erythrogrammum, plicatile,* and *reinwardti.*

Hydrops martii (Wagl.) = *Hygina fasciata* (Gray), Günther, *l. c.* p. 421.

Hydrops callostictus, sp. n., Günther, *l. c.* pl. 17. fig. B, Upper Amazons.

Dendrophidæ.

Ahætulla kirkii, sp. n., Günther, Ann. & Mag. Nat. Hist. 1868, i. p. 424, Zanzibar: also *Ahætulla dorsalis* (Bocage) is characterized, ibid.

[*Ahætulla*] *Thrasops cupreus,* sp. n., Cope, Proc. Nat. Sc. Philad. 1868, p. 106, Upper Amazons.

Rachiodontidæ.

Dasypeltis scabra. A variety from Zanzibar described by Peters, Monatsber. Ak. Wiss. Berlin, 1868, p. 451.

Psammophididæ.

Tropidococcyx is again referred to *Dryiophis* by Peters, Monatsber. Ak. Wiss. Berlin, 1868, p. 452.

Psammophis (*Psammodynastes*) *conjunctus* is described as a new species, said to be from Calcutta, by Peters, *l. c.* p. 451. The author unites *Psammodynastes* with *Psammophis.*

Rhagerrhis tritæniata, sp. n., Günther, Ann. & Mag. Nat. Hist. 1868, i. p. 423, pl. 19. fig. H, from South-eastern Africa.—The same author describes *Rhamphiophis rostratus* (Ptrs.) as a new species, *Rhagerrhis unguiculata,* p. 422, pl. 19. fig. G.

Mimophis, g. n. Psammophid., Günther, *l. c.* p. 421. Body and tail moderately slender, scarcely compressed; form of the head as in *Psammophis,* but with the loreal region less distinctly grooved; rostral shield not enlarged; eye of moderate size, with round pupil; nostril small, placed in a single shield, behind which is another small shield; loreal none, replaced by the posterior frontal, which is bent downwards on the sides. Scales smooth, with one apical groove, in 17 rows, those of the vertebral series not enlarged; ventrals not keeled; anal and subcaudals bifid, the third or fourth maxillary tooth enlarged; posterior maxillary tooth grooved; front teeth of the lower jaw larger than the posterior.—*Mimophis madagascariensis,* sp. n., Günther, *l. c.* pl. 18.

Dipsadidæ.

Leptodira nigrofasciata, sp. n., Günther, Ann. & Mag. Nat. Hist. 1868, i. p. 425, from Nicaragua.

Dipsas ochracea, sp. n. (Theobald), Günther, *l. c.* p. 425, from Pegu.

Pythonodipsas, g. n., Günther, *l. c.* p. 425. Head depressed, very distinct from neck; body depressed, of moderate length. Eye of moderate size; two pairs of frontals; one vertical; superciliary well developed; occipitals replaced by scales; labials separated from the eye by a ring of scales; scales keeled, in 21 rows; subcaudals simple; maxillary with the hindmost tooth slightly enlarged and grooved in its basal portion; anterior maxillary teeth and anterior palatine teeth rather larger than the middle ones.—*Pythonodipsas carinata,* sp. n., Günther, *l. c.* p. 426, pl. 19. figs. K, from the Zambezi.

Lycodontidæ.

Lycophidium irroratum (Leach)=*Hypsirhina maura* (Gray)=*Metoporhina irrorata* (Gthr.)=*Alopecium fasciatum* (Gthr.), Günther, Ann. & Mag. Nat. Hist. 1868, i. p. 426. The same author remarks that *Alopecion* may be erased from the system, *A. annuliferum* and *A. variegatum* being *Boodon*: ibid.

Lycophidium acutirostre, sp. n., Günther, *l. c.* p. 427, pl. 19. figs. D, Zanzibar.

Lycophidium horstockii. Notes on its variation by Günther, *l. c.*

Lamprophis aurora is referred to *Boodon* by Peters, Monatsber. Ak. Wiss. Berlin, 1868, p. 642.

Amblycephalidæ.

Pareas. Mr. Theobald describes *P. margaritophorus* (Jan) under the name of *P. macularius* (Blyth), *l. c.* p. 54, and adds as new *P. modestus*, from Rangoon, p. 55.

Leptognathus. Mr. Cope includes under this name *Anholodon*, *Cochliophagus*, *Dipsadomorus*, *Petalognathus* and *Tropidodipsas*, and gives a synopsis of fourteen species, one of which, *L. oreas*, from Quito, is believed to be new. Proc. Ac. Nat. Sc. Phil. 1868, pp. 107–109. He adds as other new species:—*L. articulata*, from Costa Rica, p. 135; *L. vaga*, p. 136; *L. anthracops*, from Central America, p. 136; *L. turgida*, from Paraguay, p. 136.

Boidæ.

Ungalia. Mr. Cope distinguishes six species, of which *U. cana* from the Bahamas and *U. dipsadina* from Cuba are described by him for the first time. Proc. Ac. Nat. Sc. Phil. 1868, pp. 128–130.

Pythonidæ.

Python reticulatus. Notes by Mr. Theobald, Journ. Linn. Soc. x. p. 37.

Acrochordidæ.

Chersydrus granulatus. Notes by Mr. Theobald, *l. c.* p. 59.

Elapidæ.

Diemenia reticulata. Mr. Krefft draws attention to the [by no means improbable] fact, that Schlegel's *D. psammophis* was founded on specimens named *D. reticulata* by Gray. Proc. Zool. Soc. 1868, p. 3.

Pseudechis. Mr. Krefft notes the characters of some specimens formerly referred by him to *Ps. australis* (see Zool. Record, ii. p. 150), *l. c.* p. 3. [Perhaps these examples belong to a distinct species.]

Naja. Dr. Strauch has reexamined Eichwald's *Tomyris oxiana*, and shows that it belongs to this genus; he gives a synopsis of the four species known. Bull. Ac. Sc. St. Pétersb. xiii. pp. 81–94; or Mél. Biol. vi. pp. 636–654.

Hamadryas elaps. Notes by Mr. Theobald, *l. c.* p. 60.

Callophis japonicus, sp. n., Günther, Ann. & Mag. Nat. Hist. 1868, i. p. 428, pl. 17. fig. C, Nagasaki.

Elaps batesii, sp. n., Günther, *l. c.* fig. D, from Pebas.

Elaps filiformis has sometimes two postoculars. Günther, *l. c.* p. 429.

Elaps imperator is described as a new species by Cope. Proc. Ac. Nat. Sc. Philad. 1868, p. 110, Upper Amazons.

Crotalidæ.

Bothrops. Dr. Hensel, from an examination of numerous examples, comes to the conclusion that *B. atrox*, *B. alternatus*, *B. jararaca*, and *Craspedocephalus brasiliensis* are one and the same species. Wiegm. Arch. 1868, p. 334.

M. Bocourt describes as new the following species from Guatemala:—*Bothrops affinis*, *B. brammianus*, *B. ophryomegas*, *B. bicolor*, and *B. nasutus*. Ann. Sc. Nat. x. 1868, pp. 201–202.

Trigonocephalus xanthogrammus, sp. n., Cope, Proc. Ac. Nat. Sc. Philad. 1868, p. 110, from Ecuador.

ATRACTASPIDIDÆ.

Atractaspis rostrata, sp. n., Günther, *l. c.* p. 429, pl. 19. figs. I, Zanzibar.

PSEUDOPHIDIA.

Cæcilia. Prof. Leydig has examined the anatomy of the integuments and eye. Zeitschr. wiss. Zool. 1868, pp. 280–300.

BATRACHIA.

Dr. E. GOURIET demonstrates that the groups of Batrachians are indicated by the differences in the arrest of development in the various types, and proposes the following arrangement in parallel series (Rev. et Mag. Zool. 1868, pp. 199–210) :—

Ser. 1st. EUBATRACIENS.			Ser. 2nd. ADÉLOBATRACIENS.	
PULMONÉS.	*Atrétodères*	*Anoures*	Pipæides.	*Batrachophidiens* ou *Péromèles.*
			Bufonides.	
			Ranides.	
			Hylæides.	
		Urodèles	Salamandrides.	
				Cæciloïdes.
	Trématodères		Amphiumides.	
BRANCHI-PULMONÉS.	Tétramèles		Protéides.	
	Dimèles		Sirénides.	*Ichthyobatraciens.*
	Atélémèles			Lépidosirénides.

BATRACHIA SALIENTIA.

Dr. GÜNTHER states that the Collection of the British Museum contains 313 species, the number of typical specimens amounting to 125. The species acquired since 1858 are enumerated. Proc. Zool Soc. 1868, p. 478.

RANINA.

Tomopterna labrosa, sp. n., Cope, Proc. Ac. Nat. Sc. Philad. 1868, p. 138, Madagascar.—*Tomopterna porosa*, sp. n., Cope, *l. c.* p. 139, Japan.

Mixophyes fasciolatus, described by Keferstein, Wiegm. Arch. 1868, p. 254.

Pachybatrachus *, g. n. Ranid., Mivart, Proc. Zool. Soc. 1868, p. 559. No vomerine teeth; a glandular fold on each side of the body; one small tarsal tubercle at base of first toe, and a minute rudiment at the base of fourth toe; tarsus less than half the length of tibia; tongue deeply notched and free behind; tympanum very large, but not very distinct. *P. robustus*, sp. n., p. 560, hab. — ?

Prostherapis inguinalis is characterized as a new genus of frogs by Mr. Cope, and referred to his family *Calostethidæ*, Proc. Ac. Nat. Sc. Philad. 1868, p. 137, from New Granada.

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* This name, being preoccupied, has lately been changed into *Cliotarsus.*

Cystignathus rhodonotus, sp. n., Günther, Proc. Zool. Soc. 1868, p. 481, pl. 37. fig. 1, from Eastern Peru.—*Cystignathus hylœdactylus*, sp. n., Cope, *l. c.* p. 115, Upper Amazons.

Limnodynastes. Dr. Keferstein seems now to have modified his views as regards the specific distinction of these frogs (see Zool. Record, iv. p. 145). He distinguishes now :—1. *L. peronii*, with var. *krefftii*; 2. *L. tasmaniensis* = *L. affinis*; 3. *L. salminii*; 4. *L. dorsalis.* Wiegm. Arch. 1868, pp. 257–260.

Platypectrum superciliare (see Zool. Record, iv. p. 145) is now referred by Dr. Keferstein to *Heliorana* (Steindachner) and figured, *l. c.* p. 267, taf. 5. fig. 7.

Crinia varia is now described as distinct from *C. georgiana* by Dr. Keferstein (Wiegm. Arch. 1868, p. 264, taf. 6. figs. 11–13), who thinks *Pteropherynus affinis* to be identical with the latter.

Nannophrys, g. n. Asterophryd., Günther, *l. c.* p. 482. Fingers and toes tapering, free to the base; lower jaw with a pair of very slightly prominent apophyses in front and with a pointed symphysial tubercle; the internal openings of the nostrils and eustachian tubes small; tympanum of moderate size, distinct. No parotoids. The transverse processes of the sacral vertebra dilated into a flat triangle. Vomer with two very inconspicuous prominences on which no teeth can be distinguished. Tongue deeply forked behind. Upper eyelid flaccid, without prominent edge.—*Nannophrys ceylonensis*, sp. n., *l. c.*

Uperolia marmorata, figured by Dr. Keferstein, Wiegm. Arch. 1868, taf. 6. fig. 14.

Bombinatorina.

Cacotus, g. n., Günther, *l. c.* p. 482. Fingers and toes tapering. Maxillary and vomerine teeth distinct. Tongue broad, slightly notched behind. Toes quite free; metatarsus with two tubercles. Tympanum absent; eustachian tubes reduced to a minute foramen. Transverse processes of sacral vertebra not dilated. *Cacotus maculatus*, sp. n., pl. 38. fig. 5, from Chile.

Brachycephalina.

Pseudophryne coriacea, sp. n., Keferstein, Nachricht. Ges. Wiss. Götting. 1868, p. 326, and Wiegm. Arch. 1868, p. 272, taf. 6. fig. 15, from Clarence River.

Bufonina.

Atelopus varius figured by Keferstein in Wiegm. Arch. 1868, taf. 8. figs. 33 & 34.

Atelopus longirostris, sp. n., Cope, Proc. Ac. Nat. Sc. Philad. 1868, p. 116, Quito.—*Atelopus* = *Phrynidium*, ibid.

Glyphoglossus, g. n. Rhinodermat., Günther, *l. c.* p. 483. Allied to *Cacopus*, the head being short; crown convex; mouth transverse, very narrow; limbs short; eye small. The space between and behind the inner nostrils is even, without papillæ; one papilla in the median line of the hinder part of the palate. Tongue long, free, and notched behind and in front, divided into two lateral halves by a deep groove. Tympanum hidden; openings of the eustachian tubes small. Toes broadly webbed; metatarsus with a large, compressed, cutting, shovel-like prominence.—*Glyphoglossus molossus*, sp. n., pl. 38. fig. 1, from Pegu.

Pachybatrachus, g. n. Bufonin., Keferstein, Nachricht. Ges. Wiss. Götting. 1868, p. 326; or Wiegm. Arch. 1868, p. 273. Head small; body short and thick; tympanum covered by the skin, but visible. A prominence at the posterior angle of the choanæ, which are much larger than the openings of the eustachian tubes. Two large spur-like tubercles on the metatarsus. Clavicle and manubrium sterni absent. Toes with a rudimentary web.—*P. petersii*, sp. n., Keferstein, from New South Wales, *l. c.* 2°, taf. 6. figs. 8–10. [This frog appears to be closely allied to *Cacopus*.]

Hypopachus seebachii figured by Keferstein, Wiegm. Arch. 1868, taf. 9. figs. 1 & 2.

Bufo hæmatiticus figured by Keferstein, Wiegm. Archiv, 1868, taf. 9. fig. 7.

Bufo glaberrimus, sp. n., Günther, *l. c.* p. 483, pl. 37. fig. 2, Bogota.—*Bufo andianus*, sp. n., Cope, Proc. Ac. Nat. Sc. Philad. 1868, p. 115, New Granada.—*Bufo argillaceus*, sp. n., Cope, ibid. p. 138, Western Mexico.

Hylina.

Hylorana erythræa. Specimens from Cape York have been described as *Hylorana dæmeli*, sp. n., by Dr. Steindachner, Sitzgsber. Ak. Wiss. Wien, 1868, lvii. p. 532. c. tab. [The British Museum possesses a series of examples from the same collector; the largest are about thrice the size of those in the Vienna collection. Dr. Steindachner was evidently not aware that the lower glandular fold is often reduced to some supraaxillary glands in Indian specimens, as is precisely the case with those Cape-York examples.]

Hylorana leptoglossa and *Hylorana subcærulea* [probably = *H. macularia*, Blyth] are described as new species from Burmah by Cope, Proc. Ac. Nat. Sc. Philad. 1868, pp. 139, 140.

Megalixalus, g. n. Polypedat., Günther, *l. c.* p. 485. Vomerine teeth none. Fingers and toes webbed; none of the fingers opposed to the others. Tympanum small; eustachian tubes and inner nostrils of moderate width; tongue free and deeply notched behind. Pupil of the eye vertical. Apophyses of the sacral vertebra styliform. Three phalanges of the fifth toe free from the fourth.—*Megalixalus infrarufus*, sp. n., hab. —?

Ixalus. Dr. Günther (*l. c.* p. 484) describes three new species, viz. *I. macropus* (pl. 39. fig. 4) and *I. nasutus* from Ceylon, and *I. opisthorhodus* (pl. 37. fig. 3) from the Nilgherries.

Polypedates. Dr. Günther (*l. c.*) describes four new species, viz. *P. nanus*, p. 485, pl. 39. fig. 3, *P. nasutus*, p. 486, pl. 39. fig. 2, and *P. cavirostris*, p. 486, pl. 39. fig. 1, from Southern Ceylon; and *P. rufescens*, p. 486, from West Africa.

Leiyla, g. n. Polypedatid., Keferstein, Nachricht. Ges. Wiss. Götting. 1868, p. 330. Tympanum very distinct; vomerine teeth; tongue emarginate; fingers free, toes shortly webbed; disks small. Lower parts quite smooth.—*L. güntherii*, sp. n., Keferstein, *l. c.*, from Costa Rica. Figured in Wiegm. Arch. 1868, p. 296, taf. 9. figs. 4, 5.

Rappia lagoensis, sp. n., Günther, *l. c.* p. 487, pl. 40. fig. 2, Lagos.

Hylambates viridis, sp. n., Günther, *l. c.* p. 487, West Africa.—*Hylambates palmatus*, sp. n., Peters, Monatsber. Ak. Wiss. Berlin, 1868, p. 453, fig. 2, from Ilha de Principe, West Africa.

Hylodes sallæi, sp. n., Günther, *l. c.* p. 487, pl. 38. fig. 3, Central America.

Hemiphractus divaricatus, sp. n., Cope, Proc. Ac. Nat. Sc. Phil. 1868, p. 114, Upper Amazons.

Litoria freycinetii described by Keferstein, Wiegm. Arch. 1868, p. 276 *Litoria nasuta*, figured ibid. taf. 6. fig. 16.—The author unites *Litoria* with *Hyla*.

Hyla. Dr. Günther (*l. c.*) describes four new species, viz.:—*H. dasynotus*, p. 488, pl. 38. fig. 2, Brazil; *H. rhodoporus*, p. 488, pl. 37. fig. 4, Brazil and Surinam; *H. triangulum*, p. 489, pl. 38. fig. 4, Brazil; and *H. leucotænia*, p. 489, pl. 40. fig. 4, Rio Grande. *Hyla rubicundula* (Reinh. & Ltk.) is figured p. 489, pl. 40. fig. 3.

Hyla. *H. schuettei* and *Hyla dentata* are described as new species from New South Wales by Prof. Keferstein, Nachricht. Ges. Wiss. Götting. 1868, pp. 328, 329.—The same author redescribes and figures these species in Wiegm. Archiv, 1868, p. 279, taf. 8. figs. 27, 28, and p. 284, taf. 7. figs. 20, 21.—Several other known species are described and figured in the same paper, viz.:—*H. lesueurii* [?], p. 278, taf. 7. figs. 24, 25, taf. 8. fig. 26; *H. citropus*, taf. 7. figs. 22, 23; *H. peronii*, taf. 8. figs. 30, 31; *H. rubella*, taf. 8. fig. 29; *H. aurea*, taf. 7. figs. 18, 19. (*Chirodryas raniformis*, see Zool. Record, iv. p. 148, turns out to be the last-named common species!)

Hyla marmorata (Daud.). Mr. Cope proposes for the frog described by Burmeister under this name the appellation *H. senicula*. Proc. Ac. Nat. Sc. Philad. 1868, p. 111.

Hylella carnea, sp. n., Cope, *l. c.* p. 111, Upper Amazons.

Ranula. A frog in which Mr. Cope believes he has recognized the *Rana affinis* (Ptrs.) is described by him, *l. c.* p. 117; it is *Pohlia* of Steindachner. The species formerly referred by the author to *Ranula* belong to a distinct genus, *Trypheropsis*.

Trachycephalus insulsus and *wrightii* (Cope) are believed to be merely varieties of *T. marmoratus*, by Gundlach, Repert. Fis.-nat. de Cuba, ii. p. 118.

Phyllomedusa scleroderma, sp. n., Cope, Proc. Ac. Nat. Sc. Phil. 1868, p. 112, Surinam.

Pithecopus (Cope). Mr. Cope gives a synopsis of four species distinguished by him, one of them, *P. tarsius*, being described by him for the first time. *L. c.* pp. 112–114.

Hylaplesiina.

Callula. The *Megalophrys guttulata* of Blyth proves to belong to this genus. Günther, *l. c.* p. 490, pl. 40. fig. 1.

Dendrobates typographus figured by Keferstein, Wiegm. Arch. 1868, taf. 9. fig. 7.

BATRACHIA GRADIENTIA.

Ranodon kessleri, sp. n., Ballion, Bull. Soc. Nat. Mosc. 1868, i. p. 138, from Kapal, South-western Siberia. [See Zool. Record, iii. p. 130.]

Salamandrina perspicillata. Notes by Prof. Lessona in Proc. Zool. Soc. 1868, pp. 254–256.

Œdipina, g. n., near *Batrachoseps*, Keferstein, Nachricht. Ges. Wiss. Götting. 1868, August, p. 331. Body and especially tail long, worm-shaped; head very small; tongue circular, peltate; legs far apart, weak; toes very short, subequal, free, 4 | 5. Palatine teeth in an arched line on each side of

the inner nostrils. *Œdipina uniformis*, sp. n., ibid. and Wiegm. Arch. 1868, p. 299, taf. 9. figs. 8, 9, from Costa Rica.—This name has priority over *Ophiobatrachus vermicularis*, g. and sp. n., Gray, Ann. & Mag. Nat. Hist. 1868, October, ii. p. 297, which is evidently the same animal.

Œdipus salvinii, sp. n., Gray, Ann. & Mag. Nat. Hist. 1868, ii. p. 297, from Guatemala.

Siredon. Prof. O. C. Marsh has watched the metamorphosis of *Siredon lichenoides* (Baird) into *Amblystoma mavortium* (Baird), and given an account of his observations in Silliman's Journal, vol. xlvi. pp. 364–374. The Axolotls were obtained from a small lake with brackish water in the Rocky Mountains, near the Pacific Railroad, 7000 feet above the sea. Five out of seven specimens underwent the complete metamorphosis, the successive phases being in no two individuals quite contemporaneous or identical. After its completion the individuals differed considerably in colours. The specimens are figured in the *Siredon*- and *Amblystoma*-state.

Prof. Cornalia has brought some Axolotls from Paris to Milan. Rendic. Ist. Lomb. Sc. e Lett. 1868, p. 383.

PISCES

BY

ALBERT GÜNTHER, M.A., M.D., PH.D., F.R.S.

A. *Separate Publications.*

GÜNTHER, A. Catalogue of the Fishes in the British Museum. London, 8vo, 1868, vol. vii. pp. 512.

The scope and object of this work has been described in the Record for 1864, vol. i. p. 133. The present volume contains the families *Heteropygii, Cyprinidæ, Gonorhynchidæ, Hyodontidæ, Osteoglossidæ, Clupeidæ, Chirocentridæ, Alepocephalidæ, Notopteridæ,* and *Halosauridæ.* The number of species treated of amounts to 1281, many (407) being so imperfectly known that they are mentioned by name only. Cuvier and Valenciennes enumerated 673 species in the corresponding parts of the 'Histoire naturelle des Poissons,' 318 of this number being either nominal or very imperfectly described.

PETERS, W. C. H. Naturwissenschaftliche Reise nach Mossambique. Zoologie. IV. Flussfische. Berlin, 1868, 4to, pp. 116, with 20 plates.

The author gives an account of the collection of freshwater fishes made on the Zambeze during his expedition in the years 1842 to 1848. The species were enumerated by him in the 'Monatsberichten der Berliner Akademie,' 1852 & 1855, and are now described in detail, and illustrated by excellent figures. Remarks on the structure of internal organs are added to most of them. He treats altogether of fifty-one species, four of which are found in the Island of Johanna, forty-seven in Mossambique, and forty-four in the Zambeze. He remarks that four of the latter may be regarded as marine species, two extend to India, one is spread nearly over the whole of Africa, five are found in the Nile and West-African rivers, one in Guinea, whilst twenty-eight are peculiar to the system of the Zambeze.

When we regard the scientific value of this most elaborate publication, it would appear almost trivial to indicate the slight modifications of those numbers which we might suggest, having a different opinion with regard to the validity of certain species. However, as the author has repeatedly and prominently stated that the great English expedition to the Zambeze regions has added only a single species to this part of the fauna, we think

it only due to Dr. Kirk to state that several of the species observed by him in the Zambeze are rejected by Prof. Peters, and that those most remarkable forms from Lake Nyassa, for the knowledge of which we are indebted to Dr. Kirk alone, are not even alluded to in this work.

Steindachner, F. Allgemeine Bemerkungen über die Süsswasserfische Spaniens und Portugals und Revision der einzelnen Arten. Wien, 1866, 8vo, pp. 15. [General remarks on the Freshwater Fishes of Spain and Portugal, and revision of the species.]

This pamphlet has been issued by the author, to whom we are indebted for a copy (received in 1869).

B. *Papers published in Journals.*

Adams, A. L. Death of Fishes in the Bay of Fundy. Amer. Natur. 1868, ii. pp. 337–342.

Barron, Ch. (See Macdonald, J. D.)

Blake, J. On the anal-fin appendages of Embiotocoid Fishes. Journ. Anat. & Phys. 1868, iii. pp. 30–32, pl. 2.

Bleeker, P. Description de trois espèces inédites de Chromidoides de Madagascar. Versl. & Meded. Ak. Wet. Amsterd. 1868, ii. pp. 307–314.

——. Notice sur le *Parupeneus bifasciatus* (*Mullus bifasciatus*, Lac.) de l'île de la Réunion. Ibid. pp. 342–348.

——. Sur les espèces confondues sous le nom de *Genyoroge bengalensis*, Günth. Ibid. iii. pp. 64–77.

——. Description d'une espèce inedite de *Chætopterus* de l'île d'Amboine. Ibid. iii. pp. 80–85.

Bocourt, —. Descriptions de quelques Acanthoptérygiens nouveaux appartenant au genres Serran et Mesoprion, recueillis dans l'Amérique centrale. Ann. Sc. Nat. 1868, x. pp. 222–224.

Boeck, A. Ueber Heringsasung. Tidsskr. for Fiskeri Kjöbenh. 1867, i. p. 154; translated in Wiegm. Arch. 1868, pp. 72–81. [On the food of the Herring.]

Brown, R. Observations on the medicinal and economic value of the Oulachan (*Osmerus pacificus*, Rich.). Pharmaceut. Journ. 1868: June.

Canestrini, G. Intorno ai Labroidi del Mediterraneo Studi. Annuar. Soc. Nat. Modena, 1868, iii. pp. 104–144, with two plates. The same paper is reproduced in abstract in Comment. Faun. Flor. e Gea, n. 3, Venezia, 1868, 1 Gennajo.

Capello, F. de Brito. Catalogo dos Peixes de Portugal que existem no Museu de Lisboa. Jorn. Sc. math. phys. e nat. Lisboa, no. v. 1868. (Continuation, see Zool. Record, iv. p. 151.)

——. Noticia ácerca de um peixe pouco conhecido proveniente do Brasil. Ibid. with a plate. [*Chætostomus hystrix*, C. & V.]

Cope, E. D. On the distribution of Freshwater Fishes in the Alleghany Region of South-western Virginia. Journ. Ac. Nat. Sc. Philad. 1868, vi. pp. 207–247, with three plates.

Day, F. On some new or imperfectly known Fishes of India. Proc. Zool. Soc. 1868, pp. 149–156.

——. On some new Fishes from Madras. Ibid. pp. 192–199.

——. Observations on some of the Freshwater Fishes of India. Ibid. pp. 274–288, 580–585.

Duméril, A. Prodrome d'une Monographie des Esturgeons et description des espèces de l'Amérique du Nord qui appartiennent au sous-genre *Antaceus*. Nouv. Arch. Mus. d'Hist. Nat. Paris, 1867, iii. pp. 131–188, pls. 11–16.

Gemmellaro, C. C. Saggio d'Ittiologia del Golfo di Catania. Atti Accad. Gioenia Sc. Nat. di Catania, xix. pp. 113–158.

Günther, A. An account of the Fishes of the States of Central America, based on collections made by Capt. J. M. Dow, F. Godman, Esq., and O. Salvin, Esq. Trans. Zool. Soc. 1868, vi. pp. 377–494, with plates 63 to 87, and woodcuts.

——. Descriptions of two new Gobioid Fishes from Sarawak. Ann. & Mag. Nat. Hist. 1868, i. pp. 264–266, with a plate.

——. Additions to the Ichthyological Fauna of Zanzibar. Ibid. pp. 457–459.

——. Report on a collection of Fishes made at St. Helena by J. C. Melliss, Esq. Proc. Zool. Soc. 1868, pp. 225–228, with two plates.

——. Descriptions of Freshwater Fishes from Surinam and Brazil. Ibid. pp. 229–247, with three plates and numerous woodcuts. (An abstract of this paper in Ann. & Mag. Nat. Hist. 1868, i. pp. 475–481.)

Guichenot, —. Notice sur le Sériolophe, nouveau genre de Poissons de la famille des Scombéroïdes, et description d'une nouvelle espèce. Mém. Soc. Sc. Nat. Cherbourg, 1868, xiii. pp. 90–95.

——. Index generum ac specierum Anthiadidorum hucusque in Museo Parisiensi observatorum. Ann. Soc. Linn. de Maine et Loire, x.

Hensel, R. Beiträge zur Kenntniss der Wirbelthiere Südbrasiliens. Wiegm. Arch. 1868, pp. 356–375. [Contributions to the knowledge of the vertebrates of Southern Brazil.]

This is the commencement of the account of the fishes; for the previous communications, see Zool. Record, iv. p. 129, and this volume, p. 115.

Hill, R. On Poisonous Fishes. Proc. Scient. Assoc. Trinidad, 1868, pp. 210–223.

——. On Fish-poisons. Ibid. pp. 227–237.

Jouan, H. Note sur quelques poissons nuisibles du Japon. Mém. Soc. Sc. Nat. Cherbourg, 1868, xiii. pp. 142–144.

——. Notes sur quelques poissons de mer observés à Hong-Kong. Ibid. pp. 241–282.

Kner, R. Ueber neue Fische aus dem Museum der Herren J. C. Godeffroy und Sohn in Hamburg. Sitzgsber. Ak. Wiss. Wien, 1868, lviii. pp. 26–31.

The characters of the species considered to be new are very briefly indicated; the paper appears to be preliminary.

Macdonald, J. D., and Barron, Ch. On a supposed new species of *Galeocerdo* [*G. rayneri*] from Southern Seas. Proc. Zool. Soc. 1868, pp. 368–371, pl. 32.

—— ——. Notes on *Heptranchus indicus*, chiefly as regards sexual characters. Ibid. pp. 371–373, pl. 33.

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——. Ueber die von Dr. F. Jagor in dem ostindischen Archipel gesammelten und dem K. zoologischen Museum übergebenen Fische. Ibid. pp. 254–281.

——. Ueber eine von dem Baron C. von der Decken entdeckte neue Gattung von Welsen, *Chiloglanis*, und einige andere Süsswasserfische aus Ost-Africa. Ibid. pp. 598–602, with a plate.

Playfair, R. L. On a collection of Fishes from Madagascar. Proc. Zool. Soc. 1868, pp. 9–12.

Poey, F. Policia de la Pesca. Repert. Fis.-nat. de Cuba, ii. 1867, pp. 37–69.

Poey, F. Revista de los Peces descritos por Poey. Ibid. pp. 153–174.

——. Peces Cubanos especies nuevas. Ibid. pp. 229–245.

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——. Synopsis Piscium cubensium. Ibid. 1868, pp. 279–484.

Sars, G. O. Om Vintertorskens (*Gadus morrhua*) Forplantning og Udvikling. Forhandl. Vid.-Selsk. Christ. 1866, pp. 237–249. [On the propagation and development of the Codfish.]

Steindachner, F. Ichthyologischer Bericht über eine nach Spanien und Portugal unternommene Reise. (V. & VI. Fortsetzung.) Uebersicht der Meeresfische an den Küsten Spanien's und Portugal's. Sitzgsber. Ak. Wiss. Wien, lvii. 1868, pp. 351–424, with six plates; pp. 667–738, with six plates. [Report on an ichthyological excursion to Spain and Portugal. Continuation nos. 5 & 6. The marine Fishes of the coasts of the Pyrenean Peninsula].
See Zool. Record, iv. p. 153.

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Wright, E. P. Notes on the transportation of living Fish from south of the Equator to Europe. Ann. & Mag. Nat. Hist. 1868, ii. pp. 438–441.

C. *Anatomical and Physiological Publications.*

Baudelot, E. De la détermination des pièces osseuses qui se trouvent en rapport avec les premières vertèbres chez les Cyprins, les Loches et les Silures. Compt. Rend. 1868, lxvi. pp. 330–334.

Bettoni, Eug. Influsso della pressione barometrica sopra alcuni pesci d'acqua dolce studi. Atti Soc. Ital. Sc. Nat. x. 1867, pp. 422–432. [On the influence of barometric pressure on some freshwater fishes.]

Carbonnier, —. Etudes sur les causes de la mortalité de quelques poissons d'eau douce (Extrait). Ann. Sc. Nat. 1868, ix. p. 92.

Hasse, C. Bemerkungen über das Gehörorgan der Fische.

Verhandl. Phys. med. Gesellsch. Würzb. 1868, i. pp. 92–104. [Remarks on the auditory organ of fishes.]

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The Recorder has not seen this treatise.

Jones, Th. W. The caudal heart of the Eel a lymphatic heart.—Effect of the force with which the lymph-stream is propelled therefrom on the flow of the blood in the vein into which the heart opens.—Explanation of the appearance of blood propelled in successive drops, as if from the heart, along the caudal vein.—Influence which the force of the lymph-stream from the heart exerts in accelerating and promoting the flow of the blood in the caudal vein. Proc. Roy. Soc. 1868, p. 230–231 (abstract).

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Lee, R. J. Observations on the ciliary muscle in Fish, Birds, and Quadrupeds. Journ. Anat. & Phys. 1868, iii. pp. 14–23, with woodcuts.

McIntosh, W. C. Experiments on young Salmon. Journ. Microsc. Sc. viii. 1868, pp. , with a plate.
Experiments performed with irritants and other poisons.

Miklucho-Maclay. Beitrag zur vergleichenden Anatomie des Gehirns. Jena. Zeitschr. 1868, iv. pp. 553–569, with woodcuts. [Contribution to the comparative anatomy of the Brain.]

Parker, W. K. A monograph of the Structure and Development of the Shoulder-girdle and Sternum in the Vertebrata. London, 1868, 4to, pp. 237, with 30 plates. Published by the Ray Society.

Plateau, F. Sur la vision des Poissons et des Amphibies. Mém. Cour. Ac. Roy. Belg. xxxiii. pp. 45, with a plate.

Salbey, R. Ueber die Structur und das Wachsthum der Fischschuppen. Reichert u. Du Bois-Rey. Arch. Anat. 1868,

pp. 729–749, with a plate. [On the structure and growth of scales of fishes.]

Stieda, L. Studien über das centrale Nervensystem der Knochenfische. Zeitschr. wiss. Zool. 1868, pp. 1–70, with two plates. [Researches on the central nervous system of osseous Fishes.]

Contributions to Faunæ.

Pyrenean Peninsula. Dr. Steindachner, in the pamphlet noticed above, p. 133, states that the number of freshwater fishes of the peninsula is less than in any other country of continental Europe, and that this fish-fauna is entitled to the rank of a separate province, as an affinity to the French fauna occurs in the north of Spain only. He gives a list of the species, amounting to thirty-nine.

Dr. Steindachner has continued his report on the marine fishes of the Pyrenean Peninsula. Sitzgsber. Ak. Wiss. Wien, lvii. 1868, pp. 351–424, 667–738 (see Zool Record, iv. p. 156). These parts treat of 26 *Scombridæ*, 10 *Carangidæ*, 1 *Xiphias*, 14 *Gobiidæ*, 1 *Batrachus*, 2 *Lophius*, 14 *Blenniidæ*, 1 *Trachypterus*, 3 *Atherina*, 5 *Mugil*, 1 *Cepola*, 4 *Lepadogaster*, 1 *Centriscus*, 1 *Heliastes*, 21 *Labridæ*, 12 *Gadidæ*, 5 *Ophidiidæ*, 2 *Macrurus*, 22 *Pleuronectidæ*, 1 *Argyropelecus*, 4 *Scopelidæ*, 1 *Argentina*, 5 *Scombresocidæ*, 4 *Clupeidæ*.

Portugal. M. Capello has continued his catalogue of the Fishes of Portugal contained in the collection of the Lisbon Museum (see Zool. Record, iv. p. 156), Jorn. Sc. math. phys. e nat. Lisboa, no. v. This part contains an enumeration of the species of the remainder of the Acanthopterygians, the Pharyngognaths, and Anacanthines, with species nos. 85 to 141.

Mediterranean. For Canestrini's paper on the Labroids of the Mediterranean, see p. 152.

Gulf of Catania. Prof. Gemmellaro has worked out a catalogue of fishes observed by him on this part of the Sicilian coast; he adds notes to most of them. The paper appears to have been written under considerable disadvantages as regards the means necessary for determining species. Atti Acc. Gioenia Sc. Nat. di Catania, xix. pp. 113–158.

St. Helena. Dr. Günther has reported upon a collection made by Mr. J. C. Melliss; it contained 35 species, of which we shall mention those described as new. Proc. Zool. Soc. 1868, pp. 225–228.

United States. Prof. Cope has again published a valuable paper, by which our knowledge of the ichthyology of the United States is considerably advanced. Journ. Ac. Nat. Sc. Philad. 1868, vi. pp. 207–247. This contribution treats of the fishes of the rivers in the Alleghany region of south-western Virginia, and their distribution in the head-waters of four rivers, viz. the James, Roanoke, Kanawha, and Tennessee (Holston), having their sources in a common elevated region, whilst their mouths are most distant. The author distinguishes 14 species from the Roanoke, 19 from the James, 27 from the Kanawha, and 34 from the Holston. Excluding from consideration the universally distributed species, he comes to the conclusions:—1, that there remain still certain species which exist in waters on different sides of

the great watershed; and, 2, that the distribution of the species is not governed by the outlet of the rivers, streams having similar discharges (Holston and Kanawha, Roanoke, and Susquehannah) possessing less in common than others having different outlets (Kanawha and Susquehannah, or James). He thinks that the occurrence of species not universally distributed in the heads of different but adjacent rivers, may be best accounted for in this manner, that the water of one stream, in some elevated part of their course, may occasionally have sunk into a fault, or penetrated the limestone on one side of a monoclinal mountain, and so have found its way into the opposite valley of a stream of another hydrographic basin, carrying with it several species of fishes. The paper concludes with some general remarks on the distribution of freshwater fishes in North America east of the Rocky Mountains. From an examination of typical examples the Recorder has convinced himself that, with regard to the distinction of genera and species, Mr. Cope goes still further than the late J. Heckel in European ichthyology, a proceeding which must be taken into consideration before an unqualified belief is granted to the general conclusions arrived at by the author.

Dr. A. Leith Adams describes a case of simultaneous destruction of an immense number of sea fishes in the Bay of Fundy. Amer. Natur. ii. 1868, pp. 337–342.

West Indies. The Hon. R. Hill enumerates the marine fishes known to be hurtful or dangerous as food. He states that in most of them the poison is only incidental or accidental, but that it is an inherent quality in *Clupea thryssa*. Proc. Sc. Assoc. Trinidad, 1868, pp. 210–228. In a second article the same author treats on fish-poisons, pp. 227–237, stating that certain fishes acquire their poisonous qualities from their sojourn on reefs and shoals covered with polyps, echinoderms, &c., and from the food on which they subsist in those localities. In other cases the poison is produced by putrefaction or chemical process which the flesh of the fish undergoes a few hours after death. Fishes from deep water ought always to be safe eating.

Cuba. Prof. Poey revises the nomenclature of the fishes described by him; the corrections are so numerous that this paper must be consulted by all who study Cuban fishes. Some are simply adopted from the 'Catalogue of Fishes,' without further reference (which, in fact, would have been only just, but by no means necessary); most of them will be referred to in the special part. Rep. Fis.-nat. de Cuba, ii. 1867, pp. 153–174.

After having added 18 new species to this fauna (ibid. pp. 229–245), and described 26 species of Eels from Cuba (ibid. pp. 245–268; see this Record, p. 168), he publishes (pp. 279–484) a synopsis of all the Cuban fishes collected by him. He adds a few synonyms, the vernacular names, and sometimes critical and historical notes. The number of species treated of is about 560, not including numerous others which, at present, are regarded as dubious and not named. They may be referred to the following families:—*Percidæ* 84, *Pristipomatidæ* 26, *Squamipinnes* 15, *Mullidæ* 3, *Sparidæ* 10, *Scorpænidæ* 4, *Berycidæ* 13, *Curtidæ* 1, *Polynemidæ* 2, *Sciænidæ* 7, *Xiphiidæ* 4, *Trichiuridæ* 6, *Acronuridæ* 5, *Carangidæ* 34, *Coryphænidæ* 3,

Nomeidæ 1, *Scombridæ* 20, *Malacanthidæ* 1, *Trachinidæ* 5, *Batrachidæ* 1, *Pediculati* 9, *Cataphracti* 3, *Gobiidæ* 21, *Blenniidæ* 11, *Sphyrænidæ* 3, *Atherinidæ* 2, *Mugilidæ* 4, *Fistularidæ* 3, *Gobiesocidæ* 3, *Trachypteridæ* 1, *Pomacentridæ* 13, *Labridæ* 51, *Geridæ* 3, *Chromides* 1, *Gadidæ* 1, *Ophidiidæ* 4, *Pleuronectidæ* 12, *Scopelidæ* 7, *Stomiatidæ* 1, *Scombresocidæ* 16, *Cyprinodontidæ* 10, *Clupeidæ* 13, *Symbranchidæ* 1, *Murænidæ* 28, *Plectognathi* 31, *Lophobranchii* 4, *Ganoidei* 1, *Elasmobranchii* 29. Forty-four species are described for the first time in this synopsis, and they, with others, will be referred to in the special part. Prof. Poey has most successfully studied the fishes of his country for many years, in spite of the great obstacles in his way, in consequence of his limited access to the literature and his distance from every other collection; thus, in numerous instances, he has been obliged to be satisfied with second-hand information, and to rely chiefly upon descriptions for the determination of his species. The zoological literature of the last ten years amply shows that naturalists working with this material alone fall constantly into errors. If they have a very detailed description, they believe they find so many discrepancies with their specimens, that they cannot regard them as identical; or if the description is limited to a few important characters, it is stigmatized as insufficient; nor can they understand the propriety of conclusions arrived at by those who have numerous examples of a species from various localities, or series of the most varied types. Therefore the results of a naturalist limiting himself to a fauna and one studying the entire class will be very different. With regard to Prof. Poey's works, we cannot help regretting his recent tendency to break up very natural groups into innumerable genera; but, on the other hand, we must admire the energy with which he has prosecuted zoological studies, and raised himself far above every other author on natural history who has written in the Spanish language; and we hope that he will soon fulfil his promise and complete his "Work on Cuban Fishes."

The critical remarks and additions in this Synopsis are so numerous that the Recorder is obliged to limit his notes in the special part of this Record to the more important points, as in other equally extensive publications. No one who studies West-Indian Ichthyology can dispense with this most valuable contribution.

On legislature in the Havannah regarding the sale of poisonous or suspected fishes, see a paper by Poey, Rep. Fis.-nat. de Cuba, ii. 1867, pp. 57–69. Of local interest.

Trinidad. Dr. Günther describes three Cyprinodonts from this island,—*Anableps tetrophthalmus*, *Rivulus micropus*, and *Girardinus guppii*. Proc. Sci. Assoc. Trinidad, 1868, pp. 224–227.

Central America. Dr. Günther has collected in one memoir the results of the expeditions of Messrs. Dow, Godman, and Salvin, of which shorter accounts have been given from time to time on previous occasions (Trans. Zool. Soc. 1868, pp. 377–494). The number of the fishes treated of is 303; and he draws attention to the remarkable fact that at least 30 per cent. of the marine fishes are found on both sides of Central America, and accounts for it by assuming that one or more open channels existed between the Atlantic and Pacific Oceans. The freshwater fish-fauna is characterized thus:—A part of the *Chromides* (*Heros* &c.) and the Cyprinodontes generally have attained to their greatest development; neotropical types extending northwards prevail over nearetic extending southwards, the latter being represented by a few extreme branches. After having subdivided this fauna into six provinces, the author proceeds to give descriptions of those which he has not described elsewhere, or of which figures are given for the first time, the memoir being illustrated by woodcuts, a map, and 24 plates. The more noteworthy parts of the descriptive division of the memoir will be referred to in the special part of this Record.

South America. Dr. Günther has reported on some collections from the Upper Amazons and Surinam. Twenty new species are described. Proc. Zool. Soc. 1868, pp. 229–247.

Southern Brazil. Dr. Hensel has commenced to give descriptions of the freshwater fishes collected by him, Wiegm. Arch. 1868, pp. 356–375. The part published contains twelve species.

Palestine. For the present we have only shortly to refer to a paper on the Fauna of Palestine by Mr. Tristram, an abstract of which appeared in Proc. Roy. Soc. 1868, p. 316.

East Africa. Dr. Günther enumerates or describes ten fishes new to the Fauna of Zanzibar. Ann. & Mag. Nat. Hist. 1868, i. p. 457.—Prof. Peters mentions six other freshwater fishes from Zanzibar or the neighbouring parts of the mainland, four of which are new. Monatsber. Ak. Wiss. Berlin, 1868, p. 598.—Prof. Peters's work on the Fishes of Mozambique has been mentioned above, p. 132.

Madagascar. Col. Playfair enumerates 22 marine and freshwater species. Proc. Zool. Soc. 1868, pp. 9–12.—Dr. Bleeker describes three new species of Chromids from this island, Versl. & Meded. Ak. Wet. Amsterd. 1868, ii. pp. 307–314; and a *Cæsio*, ibid. iii. p. 78.

East-Indian Archipelago. Prof. Peters enumerates 146 species of fishes collected by Dr. F. Jagor, who paid particular attention to the freshwater fishes of the Philippine Islands. He states that there are no Cyprinoids in these islands, the absence of that family coinciding with that of acotylophorous mammals. Monatsber. Ak. Wiss. Berlin, 1868, pp. 254–281.—[The author adds a note, ibid. p. 461, according to which Heckel's statement of the occurrence of Cyprinoids (*Dangila*) in these islands is confirmed by Semper.

Dr. Bleeker gives a nominal list of 19 species from the island of *Guébé*, Versl. & Meded. Ak. Wet. Amsterdam, 1868, ii. pp. 271–272, and of 18 species

from *Ternate*, the total number of species known from this island being 315, pp. 273–274; he adds six to the 92 species known from *Obi*, p. 275; nineteen to the 250 known from *Batjan*, p. 276; he enumerates 114 species from *Solor*, pp. 283–288, and 147 from *Bintang*, pp. 289–294; he adds 11 to the 133 species previously known from *Sangir*, p. 302, and 7 to the 37 from the *Arou* Islands, p. 305.

Borneo. Dr. Günther has examined a collection made by the Marquis J. Doria at Sarawak. The total number of species known from Borneo amounts now to about 340. Ann. & Mag. Nat. Hist. 1868, i. p. 264.

Hong Kong. M. Jouan enumerates 73 species of marine fishes observed by him during a month's sojourn in the neighbourhood of Hong Kong The determinations, evidently made with the aid of scanty literary materials, are rather dubious. Mém. Soc. Sc. Nat. Cherbourg, xiii. pp. 241–282.

Japan. M. Jouan mentions *Scomber pelamys*, *Thynnus macropterus* (?), a *Tetrodon* and a *Monacanthus* as fishes considered by the Japanese to be more or less dangerous when used as food. *L. c.* pp. 142–144.

Waigiou. Dr. Bleeker enumerates 154 species from this island. *L. c.* pp. 295–301.

New Guinea. Dr. Bleeker gives a list of 14 species, raising the total number of fishes known from this island to 270. *L. c.* pp. 281–282.

Tasmania. Mr. Krefft, in his "Notes on the Fauna of Tasmania" (see p. 6), mentions only four freshwater fishes, viz. *Galaxias truttaceus* and *attenuatus*, *Anguilla australis*, and *Prototroctes muræna*.

DIPNOI.

Protopterus anguilliformis. Notes by Peters, Mossamb. Flussfisch. p. 2 (see Zool. Record, iii. p. 139).

ACANTHOPTERYGII.

Percidæ.

Etheostomata. Prof. Cope (Journ. Ac. Nat. Sc. Philad. vi. p. 210) has given a synopsis of the genera of this group, and descriptions of the following species:—*Etheostoma blennioides* (Raf.), p. 211; *Cottogaster aurantiacus*, sp. n., p. 211, pl. 24. f. 6; *Pœcilichthys zonalis*, sp. n., p. 212, pl. 24. f. 1; *Pœcilichthys flabellatus* (Raf.), p. 213; *Boleosoma olmstedi* (Storer), p. 213; *Hyostoma blennioperca*, sp. n., p. 215; *Hyostoma simoterum*, sp. n., p. 215, pl. 24. f. 5. All these fishes were obtained in rivers of the Alleghanies.

Centropomus. Dr. Günther describes six species from Central America, Trans. Zool. Soc. 1868, vi. pp. 406–408.—Four species from Central America (and San Domingo) are indicated as new by M. Bocourt, Ann. Sc. Nat. 1868, ix. pp. 90–91, viz. *C. unionensis*, *C. mexicanus*, *C. scaber*, and *C. cuvieri*, the latter from San Domingo.

Centropristis macropoma, figured by Günther, *l. c.* p. 409, pl. 65. fig. 1.

Centropristis radialis is described as *C. ayresii* (sp. n.) by Dr. Steindachner, Sitzgsber. Ak. Wiss. Wien, 1868, lvii. p. 965, taf. 1. fig. 1.

Anthias. The following is the result of M. Guichenot's examination of the specimens of this genus in the Paris Museum. He distinguishes four

subjenera:—a. Aylopon (Rafin.) for *Anthias sacer*; it appears that Cuvier and Valenciennes [and probably all other ichthyologists] confounded with it several other species, distinguished by M. Guichenot as *Ay. ivicæ*, *Ay. hispanus*, *Ay. rissoi*, *Ay. niccæensis*, *Ay. canariensis*, *Ay. algeriensis*; further, *Ay. martinicensis* and *Ay. mauritianus* are added as two other new species. b. Callanthias (Lowe). c. Paranthias, g. n. for *A. creolus*. d. Elastoma (Swains.) for *A. oculatus*. Ann. Soc. Linn. Maine et Loire, x.

Anthias fronticinctus, sp. n., Günther, Proc. Zool. Soc. 1868, p. 226, pl. 18, from St. Helena. Dr. Günther thinks it to be the type of a subsection, *Holanthias*, on account of its convex caudal fin.

Serranus. Prof. Poey has made notes on the following species (Repert. Fis.-nat. Cuba, ii. pp. 154–157):—*S. guasa*, on its pyloric appendages; *S. petrosus* (Poey), probably=*S. cardinalis* (Val.); *S. felinus* (Poey)=*S. repandus* (Poey); on the synonymy of *S. bonaci* and *S. arara*; *S. brunneus* (P.)=*S. undulosus* (Val.); *S. capreolus* (P.)=*S. impetiginosus* (M. & Tr.); *S. conspersus* (P.)=*S. flavolimbatus* (P.)=*S. niveatus* (Val.).—*Trisotropis aguaji* and *Trisotropis chlorostomus*, spp. nn., Poey, *l. c.* pp. 229, 231.—A synopsis of all the Cuban species of *Serranus* and allied genera, ibid. p. 281 *et seq.*

Dr. Günther describes *Serranus sellicauda* and *analogus* (Gill). Trans. Zool. Soc. vi. pp. 409, 410.

M. Bocourt describes as new Central-American species *Serranus varius*, *S. courtadei*, *S. quinquefasciatus*, and *S. acanthophorus*. Ann. Sc. Nat. x. 1868, pp. 222, 223.

Serranus humeralis (C. & V.) described by Steindachner, Sitzgsber. Ak. Wiss. Wien, lvii. 1868, p. 967.

Serranus maculato-fasciatus, sp. n., Steindachner, *l. c.* p. 969, taf. 2, from Mazatlan.—D. $\frac{10}{14}$. A. $\frac{3}{7}$; third dorsal spine long.

Dr. Bleeker describes two species from Réunion as new, Versl. & Meded. Ak. Wet. Amsterd. 1868, ii., viz. *Epinephelus polleni*, p. 336 (D. $\frac{11}{15}$. A. $\frac{3}{8}$), and *Epinephelus retouti*, p. 339 (D. $\frac{11}{16}$. A. $\frac{3}{8}$).

Mr. Day describes *Priacanthichthys maderaspatensis*, g. et. sp. n., Proc. Zool. Soc. 1868, p. 193, from Madras. The specimens are about 1½ inch long, of the aspect of a *Serranus*, having a serrated spine at the præopercular angle; also the ventral spine is serrated. [Mr. Day does not appear to have been aware that the young of many Acanthopterygians have a similer armature, which disappears with age. The Recorder has examined one of the typical specimens, and has no doubt that it is a young *Serranus*, perhaps *S. latifasciatus*, Schleg.]

Plectropoma affine (Poey)=*Pl. chlorurum* (Cuv.), Poey, *l. c.* p. 157.

Plectropoma multiguttatum (Gthr.)=*Epinephelus afer* (Bl.), Günther, Trans. Zool. Soc. vi. p. 411, pl. 67. fig. 3.

Genyoroge bengalensis. Dr. Bleeker states that three forms have been confounded under this name, viz. *Labrus octovittatus* (Lac.,=*D. duodecimlineata*, C. & V.), *Holocentrus quinquelineatus* (Bl.), and *H. bengalensis* (Bl.); he describes all three, Versl. & Meded. Ak. Wet. Amsterd. 1868, iii. pp. 64–77. He also states that *Diacope octovittata* (C. & V.) is an abnormal condition of *G. bengalensis*. [The Recorder has convinced himself, from a renewed examination of the examples in the British Museum, that at least the two Blochian species cannot be maintained as distinct species.]

Mesoprion. *M. caudanotatus* (Poey)=*M. buccanella* (Cuv.), Poey, *l. c.*

p. 158.—The same author makes notes on his *M. elegans*, ibid.—For a synopsis of all the Cuban species, see ibid. p. 292 *et seq.*

Mesoprion pacificus is described as a new species, from Guatemala, by M. Bocourt. Ann. Sc. Nat. x. 1868 (published in 1869), p. 223.

Mesoprion chirtah described by Mr. Day, Proc. Zool. Soc. 1868, p. 150.

Chætopterus. Dr. Bleeker states that this genus is closely allied to *Mesoprion*, and that he knows, besides the typical species, four others, viz.:—1. *Chætopterus pristipoma*=*Pristipomoides typus* (Blkr.)=*Dentex pristipoma* (Blkr.)=*Mesoprion dentex* (Blkr.); 2. *Chætopterus microlepis*, sp. n., from Amboina; 3. *Mesoprion microchir* (Blkr.); 4. *Mesoprion chrysurus* (C. & V.). Versl. & Meded. Ak. Wet. Amsterd. iii. 1868, pp. 80–85.

Gramma, g. n., Poey, *l. c.* p. 296, is said to differ from *Mesoprion* in having the lateral line interrupted. *G. loreto*, sp. n., Poey, *l. c.*, Cuba. D. $\frac{12}{9}$. A. $\frac{3}{9}$. L. lat. 45.

[*Apogon*] *Amia binotata*, sp. n., Poey, *l. c.* p. 234, Cuba. The same author describes his *Monoprion maculatus* and *pigmentarius*, ibid. p. 235, the name *Monoprion* being synonymous with *Apogon.*

Apogonichthys punctiadatus, sp. n., Poey, *l. c.* p. 233, Cuba.

Ambassis brevipinnis, sp. n., Kner, Sitzgsber. Ak. Wiss. Wien, lviii. p. 27, from the South Sea.

Scombrops. Latebrus (Poey) is synonymous with it. Poey, Repert. Fis.-nat. de Cuba, ii. p. 159.

Oligorus macquariensis. P. Ramel recommends this fish for acclimatization in Europe. Bull. Soc. Acclim. Paris, 1868, pp. 13–16.

Pomotis, Centrarchus, Bryttus. Prof. Cope (Journ. Ac. Nat. Sc. Philad. vi. p. 216) comprises these fishes under the name "*Centrarchidæ*" without characterizing the group. He refers them to ten genera, which he characterizes in a synoptic table. He gives descriptions of the following species:—*Ambloplites cavifrons*, sp. n., p. 217; *Hemioplites* (g. n.) *simulans*, sp. n., p. 217, pl. 22. f. 7; *Lepomis* [*Bryttus*], all species known, several being described for the first time, altogether eighteen in number, pp. 219–225; *Mesogonistius chætodon* (Baird), p. 218.

Pristipomatidæ.

Therapon brevispinis, sp. n., Peters, Monatsber. Ak. Wiss. Berlin, 1868, p. 256, Luzon.

Pristipoma. Dr. Günther (Trans. Zool. Soc. vi. pp. 414–417) describes seven species from Central America; he states that *Genytremus interruptus* (Gill)=*Pristipoma melanopterum*, var., and *Anisotremus taniatus* (Gill)=*Pristipoma virginicum*; he figures *Pristipoma macracanthum*, pl. 64. fig. 1, and *Pristipoma leuciscus*, pl. 66. fig. 3.

Pristipoma fulvo-maculatum described by Steindachner, Sitzgsber. Ak. Wiss. Wien, lvii. p. 982.

Conodon pacifici figured by Günther, *l. c.* p. 417, pl. 64. fig. 3.

Hæmulon obtusum (Poey)=*H. labridum* (P.); *H. dorsale* (P.)=*Perca melanura* (L.); *H. quinquelineatum* (P.)=*H. quadrilineatum* (Val.). Poey, Repert. Fis.-nat. Cuba, ii. p. 161.—*Hæmulon retrocurrens*, sp. n., Poey, *l. c.* p. 230, Cuba.—The same author gives a synopsis of all the Cuban species, ibid. p. 312 *et seq.*, adding remarks to most of them.

Hæmulon brevirostrum, sp. n., Günther, *l. c.* p. 418, Central America; *H. margaritiferum*, figured, ibid. pl. 65. fig. 2.

Hæmulon corvinæforme is described as a new species by Steindachner, *l. c.* p. 980, taf. 1. fig. 2, from Santos.

Diagramma æneum, sp. n., Peters, *l. c.* p. 454, West Africa.

Scolopsis trilineatus, sp. n., Kner, Sitzgsber. Ak. Wiss. Wien, lviii. p. 27, from the Samoa Islands.

Dentex filosus described by Steindachner, *l. c.* p. 975.

Synagris. Dr. Steindachner (*l. c.*) describes *Syn. filamentosus* (Rüpp.) (p. 976) and *Dentex* (*Heterognathodon*) *smithii*, as a new species from the Cape (p. 978, taf. 3. fig. 1).

Cæsio xanthurus, sp. n., Bleeker, Versl. & Meded. Ak. Wet. Amsterd. 1868, iii. p. 78, from Nossibé.

Emmelichthys. *Inermia* (Poey) is synonymous with it, Poey, *l. c.* pp. 161, 320.

Sparopsis latifrons, g. & sp. n., Kner, Sitzgsber. Ak. Wiss. Wien, 1868, lviii. p. 27.—Præorbital deep, entire; villiform teeth in both jaws, with an outer series of stronger teeth, and eight canine teeth in the middle; præoperculum scarcely denticulated. Cheeks scaly. Scales ctenoid. D. 10 | 11. A. $\frac{2}{8}$. L. lat. 49–50. L. transv. $\frac{6\frac{1}{2}}{16-17}$. Feejee Islands.

Squamipinnes.

Chætodon. Prof. Poey gives a synopsis of all the Cuban species, Repert. Fis.-nat. Cuba, ii. pp. 352–354. He describes as new *Sarothrodus atæniatus* and *S. amplecticollis*, p. 353.

Chætodon humeralis figured by Günther, Trans. Zool. Soc. vi. pl. 65. fig. 3.

Chætodon sanctæ helenæ, sp. n., Günther, Proc. Zool. Soc. 1868, p. 227, St Helena.—*Chætodon pelewensis*, sp. n., Kner, Sitzgsber. Ak. Wiss. Wien, lvi p. 27.

Holacanthus ocularis, sp. n., Peters, Monatsber. Ak. Wiss. Berlin, 1868 p. 147, South Sea.—*Holacanthus pœcilus*, sp. n., Peters, *l. c.* p. 454, Zanzibar [appears to be identical with *H. ignatius*, Playfair].

Pomacanthus. *Chætodon littoricola* described as a new species by Poey, *l. c.* p. 351 [is evidently another variety of *P. paru*].

Schuettea [see Zool. Record, iii. p. 141]. Dr. Steindachner states that this genus is distinguished from *Scorpis* by "homacanthous" spines and cycloid scales. Sitzgsber. Ak. Wiss. Wien, 1868, lvii. p. 993.

Mullidæ.

Upeneus (*Mulloides*) *flavovittatus* (Poey) = *U. balteatus* (Cuv.), Poey, Repert. Fis.-nat. de Cuba, ii. p. 160.

Upeneus maculatus. Notes by Poey, *l. c.*—The same author proposes the generic name *Mullhypeneus* for this species, *l. c.* p. 307, and gives a synopsis of all the Cuban species of this family.

Upeneus tetraspilus figured by Günther, Trans. Zool. Soc. vi. p. 420, pl. 66. fig. 1.

Upeneus bifasciatus. Dr. Bleeker proves, from specimens received from the island of Réunion, that the *Mullus bifasciatus* (Lac.) is distinct from *M.*

multifasciatus (Q. & G.). He also maintains that Lacépède's *M. trifasciatus* is distinct from the latter [but this requires further proof; on the contrary, we think that so common a species as the *M. multifasciatus* could not have been unknown to Commerson and Lacépède]. Versl. & Meded. Ak. Wet. Amsterd. 1868, ii. pp. 342–348.

Upeneus griseofrenatus, sp. n., Kner, Sitzgsber. Ak. Wiss. Wien, lviii. p. 27, Feejee Islands.

Upeneoides fasciolatus, sp. n., Day, Proc. Zool. Soc. 1868, p. 151, Madras.

Upeneoides cæruleus, sp. n., Day, *l. c.* p. 194, Madras.

Sparidæ.

Sargus caribæus (Poey). Notes by Poey, Repert. Fis.-nat. de Cuba, ii. pp. 160, 309.

Lethrinus jagorii is described as a new species from Luzon, by Peters, Monatsber. Ak. Wiss. Berlin, 1868, p. 257.

Pagellus caninus (Poey) = *Sparus bajonado* (Bl.), Poey, *l. c.* pp. 160, 308.

Pagellus humilis is described as a new species by the same author, p. 308.

Chrysophrys vagus described and figured by Peters, Mossamb. Flussfische, p. 11, taf. 2. fig. 1.

Chrysophrys laticeps and *Chr. cæruleosticta* described by Steindachner, Sitzgsber. Ak. Wiss. Wien, 1868, lvii. pp. 972, 973.

Hoplognathidæ.

Hoplognathus. Prof. Kner also has recognized the identity of his *Scarostoma* with this genus (see Zool. Record, iv. p. 161); but he still thinks that the fish described by him is a new species (Wiegm. Arch. 1868, in Troschel's Bericht). [It is *Hoplognathns fasciatus* of Kröyer, not of Schlegel; the name of the Japanese species may be changed to *Hoplognathus krusensternii*.]

Cirrhitidæ.

Cirrhitichthys rivulatus described and figured by Günther, Trans. Zool. Soc. vi. p. 421, pl. 86. fig. 4.

Scorpænidæ.

Sebastes viviparus, a British fish, Gray, Ann. & Mag. Nat. Hist. 1868, i. p. 312.

Sebastes nigropunctatus, sp. n., Günther, Proc. Zool. Soc. 1868, p. 227, St. Helena.

Scorpæna mellissii, sp. n., Günther, *l. c.* p. 228, pl. 19, St. Helena.

Scorpæna panda. M. Guichenot regards this fish as the type of a distinct genus, *Neosebastes*, and distinguishes a second species, *Neosebastes scorpænoides*, from Melbourne. Mém. Soc. Sc. Nat. Cherbourg, xiii. 1868, pp. 83–89.

Pentaroge marmorata described by Steindachner, Sitzgsber. Ak. Wiss. Wien, 1868, lvii. p. 984.

Teuthididæ.

Teuthis oligosticta, sp. n., Kner, Sitzgsber. Ak. Wiss. Wien, lviii. p. 30, Feejee Islands.

Berycidæ.

Rhynchichthys ornatus, sp. n., Day, Proc. Zool. Soc. 1868, p. 149, from Madras.

Polymixia lowei. *Dinemus venustus* (Poey) is synonymous with it. Poey, Repert. Fis.-nat. de Cuba, ii. p. 158.

Myripristis fulgens (Poey) = *M. trachypoma* (Gthr.), Poey, *l. c.* p. 158.

Holocentrum productum, sp. n., Poey, *l. c.* p. 300, where also the other Cuban species of this genus are enumerated.

Anomalops græffei, g. and sp. n., Kner, Sitzgsber. Ak. Wiss. Wien, 1868, lviii. p. 26. D. 5/15. A. $\frac{2}{1}\frac{1}{7}$. V. 6. With an oblong glandular plate on the suborbital ring. Feejee Isles.

Sciænidæ.

Larimus breviceps. *Amblyscion argenteus* (Gill) is synonymous with it. Günther, Trans. Zool. Soc. vi. p. 425.

Micropogon altipinnis described by Günther, *l. c.* p. 425.

Umbrina. Dr. Günther, *l. c.*, figures *U. elongata*, pl. 64. fig. 2, and describes two new Central-American species, viz. *Umbrina nasus* and *Umbrina analis*, p. 426.

Corvina. Dr. Günther (*l. c.*) describes the following species:—*C. chryso-leuca*, sp. n., p. 427, pl. 67. fig. 1, from Panama; *C. vermicularis*, sp. n., p. 427, pl. 67. fig. 2, from Panama; *C.* (*Bairdiella*) *armata* (Gill), p. 428; and *C. ophioscion* (= *Ophioscion typicus*, Gill), p. 428.

Corvina fasciata described by Steindachner, Sitzgsber. Ak. Wiss. Wien, 1868, lvii. p. 985.

Otolithus squamipinnis, sp. n., Günther, *l. c.* p. 429, Panama.

Xiphiidæ.

On the Cuban species of this family see Poey, Repert. Fis.-nat. Cuba, ii. pp. 379–381.

Xiphias gladius. Dr. Steindachner gives the measurements of two examples, Sitzgsber. Ak. Wiss. Wien, lvii. p. 396.

Carangidæ.

Trachurus. Dr. Steindachner (Sitzgsbr. Ak. Wiss. Wien, lvii.) describes *T. trachurus*, p. 382, and *T. cuvieri* (Lowe) = *T. fallax* (Capello, see Zool. Record, iv. p. 162), p. 384.

Caranx. Dr. Steindachner (*l. c.*) figures *C. dentex*, pl. 1, and describes *C. alexandrinus*, p. 388.

Dr. Günther (Trans. Zool. Soc. 1868, vi.) describes six species from Central America:—*Caranx leucurus*, p. 430, *C. speciosus* (Forsk.) = *C. panamensis* (Gill), p. 431, *C. hippos* (L.) = *C. marginatus* (Gill), p. 431, *C. caballus* (Gthr.) = *Trachurus boops* (Girard), p. 431, *C. caninus*, sp. n., from Panama, p. 432, and *C. dorsalis* (Gill), p. 432.

Caranx frontalis (Poey) = *C. lugubris* (P.); *C. heteropygus* (P.) may be the same as *C. amblyrhynchus* (C. & V.). Poey, Repert. Fis.-nat. Cuba, ii. p. 164.

The same author enumerates all the Cuban species, making remarks on them, ibid. pp. 364–370.

Caranx micraspis, sp. n., Kner, Sitzgsber. Ak. Wiss. Wien, lviii. p. 28, from the Sunda Straits.

Micropteryx polycentrus is indicated as "nov. sp. vel potius n. g. *Micropus polycentrus*" by Kner, *l. c.* p. 28, from Valparaiso.—D. 17–18 | 36. A. 36–37 (?).

Seriolophus, g. n., Guichenot, Mém. Soc. Sc. Nat. Cherbourg, xiii. p. 90. Distinguished by having the dorsal spines much prolonged and filiform; all the opercular bones covered with scales.—*Seriolophus carangoides*, sp. n., hab. —? D. 8 | $\frac{1}{30}$. A. 2 | $\frac{1}{16}$.

Seriolichthys. *Decaptus* (Poey) is synonymous with it, Poey, *l. c.* p. 165.

Chorinemus altus, sp. n., Günther, *l. c.* p. 433, Panama.

Lichia amia figured by Steindachner, *l. c.* pl. 2. fig. 1.

Trachynotus fasciatus (Gill) = *T. glaucoides* (Gthr.) described and figured by Günther, *l. c.* p. 434, pl. 69. fig. 4.

Psenes (?) *regulus*, sp. n., Poey, *l. c.* p. 375, Cuba.

Cyttidæ.

Zeus pungio figured by Steindachner, Sitzgsber. Ak. Wiss. Wien, 1868, lvii. pl. 6.

Tholichthys, g. n., Günther, Ann. & Mag. Nat. Hist. 1868, i. p. 457. A very singular form, with enormous osseous head, large eye, extremely small mouth, much dilated suprascapulary humeral; the præopercular angle is greatly enlarged, reaching nearly to the anal fin.—*Tholichthys osseus*, sp. n., from Zanzibar, p. 457, with woodcut.—D. 6 | 22. A. 20. V. 1/5.—The example is only 11 millim. long.

Stromateidæ.

Centrolophus ovalis described by Dr. Steindachner, Sitzgsber. Ak. Wiss. Wien, 1868, lvii. p. 991, taf. 4 & 5 [the author writes *Centrophorus*].

Schedophilus berthelotii is described under a new name, *Schedophilus botteri*, by Dr. Steindachner, *l. c.* p. 379, taf. 2. fig. 2 (head of young).

Coryphænidæ.

Coryphæna. Dr. Steindachner describes examples of *C. hippurus* and *C. pelagica*, *l. c.* pp. 370, 373.

Scombridæ.

Scomber scomber. Hr. G. O. Sars has observed that the Mackerel spawns in the open sea, the ova floating on the surface of the water. Nyt Magaz. for Naturvid. 1866; and Ann. & Mag. Nat. Hist. 1868, ii. p. 390.

Scomber pneumatophorus is said to be the young of *Sc. colias*: Steindachner, Sitzgsber. Ak. Wiss. Wien, lvii. p. 353.

Scomber microlepidotus (Rüpp.) = *Sc. loo* juv., according to Steindachner, *l. c.* p. 987.

Pelamys orientalis = *P. chilensis*, according to Steindachner, *l. c.* p. 989.

Echeneis. On the Cuban species of this genus, see Poey, *l. c.* pp. 376–379.

Trachinidæ.

Uranoscopus fuscomaculatus, sp. n., Kner, Sitzgsber. Ak. Wiss. Wien, 1868, lviii. p. 28, Feejee Islands.

Opisthognathus megastoma (Gthr.) = *O. macrognathus* (Poey), Poey, Repert. Fis.-nat. Cuba, ii. pp. 168, 400.

Opisthognathus papuensis, sp. n., Bleeker, Versl. & Meded. Ak. Wet. Amsterd. 1868, ii. p. 333, from Waigiou.

Batrachidæ.

Batrachus didactylus. Skull figured by Steindachner, Sitzgsbr. Ak. Wiss. Wien, 1868, lvii. pl. 5.

Thalassophryne. Descriptions and figures of the two species known are given by Dr. Günther, Trans. Zool. Soc. vi. pp. 430–439, pl. 68.

Pediculati.

Lophius vomerinus. M. Guichenot regards this fish as the type of a distinct genus, *Lophiopsis*. Mém. Soc. Sc. Nat. Cherbourg, xiii. 1868, pp. 101–106.

Antennarius tenuifilis, sp. n., Günther, Trans. Zool. Soc. vi. p. 440, from Panama.—*Antennarius leopardinus* figured ibid. pl. 69. fig. 3.

Cottidæ.

Cottus tæniopterus, sp. n., Kner, Sitzgsber. Ak. Wiss. Wien, lviii. p. 28, Decastris Bay.—*Cottus tentaculatus*, sp. n., Kner, *l. c.*, Singapore [?].

Bunocottus apus, g. et sp. n., Kner, *l. c.* p. 28. Ventral fins none. Head with obtuse osseous tuberosities.—D. 6 | 14–16. A. 9–10.—Cape Horn.

Platycephalus. Prof. Peters describes as a new species *P. maculosus* from Singapore; he states that *P. longiceps* (C. & V.) = *tentaculatus* (Rüpp.) ? = *isacanthus* (C. & V.), and says that the specimens of *P. rodericensis*, *suppositus*, and *neglectus* have three præopercular spines, and not two. Monatsber. Ak. Wiss. Berlin, 1868, p. 258.

Cataphracti.

Peristethus imberbe described by Poey, Repert. Fis.-nat. de Cuba, ii. p. 158.

Discoboli.

Cyclopterus lumpus. An example 19 inches long is noticed by Dr. J. A. Smith, Proc. R. Phys. Soc. Edinb. 1865–66, p. 355.

Gobiidæ.

Gobius. Dr. Steindachner describes specimens collected by him on the coasts of the Pyrenean peninsula, Sitzgsber. Ak. Wiss. Wien, 1868, lvii. pp. 398–416. The following may be noticed:—he describes and figures *G. quadrivittatus*, p. 399, taf. 2. figs. 3, 4; *G. minutus*, *ekströmii* (Gthr.), and *elongatus* (Gthr.) are said to be identical, p. 400; *G. quadrimaculatus* (C. & V.) is considered to be distinct from *G. minutus*, but identical with *G. jeffreysii* (Gthr.), *reticulatus* (C. & V.), and *pusillus* (Canestr.), p. 403; *G. quagga* (Ileck.) is described, p. 405; *G. cruentatus* figured pl. 3; *G. exanthematosus* = *G. capito* = *G. guttatus* (C. & V.) = *G. limbatus* (C. & V.), p. 410; *G. maderensis* (C. & V.) = *G. paganellus*, p. 413.

Prof. Poey states that the generic name *Smaragdus*, proposed by him for *Gobius smaragdus* (C. & V.), is identical with *Gobionellus* (Girard), also that of *Chonophorus* (Poey) with *Rhinogobius* (Gill), and points out differ-

ences between *G. lacertus* (Poey) and *G. mapo*. Repert. Fis.-nat. de Cuba, ii. p. 167. The same author gives a synopsis of all the Cuban species, ibid. pp. 392–395, describing *Gobius brunneus* as new, p. 393.

Gobius æneofuscus and *giuris* figured by Peters, Mossamb. Flussfische, tab. 3. figs. 1 & 2.

Gobius leucomelas, sp. n., Peters, Monatsber. Ak. Wiss. Berlin, 1868, p. 147, Red Sea.—*Gobius obscuripinnis*, sp. n., Peters, *l. c.* p. 263, *G. dispar*, sp. n., p. 264, *G. lacrymosus*, sp. n., p. 265, and *G. argulus*, sp. n., p. 267, all from Luzon.—*Gobius doriæ*, sp. n., Günther, Ann. & Mag. Nat. Hist. 1868, i. p. 265, pl. 12. fig. A, from Sarawak.

Gobius grandidierii is described as a new species from Madagascar, by Col. Playfair, Proc. Zool. Soc. 1868, p. 10.

Mr. Day describes as three new species from Madras, *Gobius madraspatensis* and *neilli*, Proc. Zool. Soc. 1868, p. 152, and *G. bleekeri*, p. 195; on the other hand, he identifies *G. sublitus* (Cantor) with *G. biocellatus* (C. & V.), p. 154.

Euctenogobius striatus, sp. n., Day, *l. c.* p. 272, with figure, Madras.

Apocryptes variegatus, sp. n., Peters, *l. c.* p. 267, Singapore.

Gobiosoma marmoratum, sp. n., Peters, *l. c.* p. 267, Samar.

Eleotris omocyaneus. A correction by Poey, *l. c.* p. 167.—Remarks on the other Cuban species, ibid. pp. 395–397.

Eleotris maculata. *Dormitator microphthalmus* (Gill) is not distinct, according to Günther, Trans. Zool. Soc. 1868, vi. p. 440.

Eleotris dasyrhynchus, sp. n., Günther, Ann. & Mag. Nat. Hist. 1868, i. p. 265, pl. 12. fig. B.

Orthostomus amblyopinus, g. et sp. n., Kner, Sitzgsber. Ak. Wiss. Wien, 1868, lviii. p. 29. Head deep, much compressed; mouth subvertical, with fine teeth and canines; gill-opening wide, but partially covered by the opercles; dorsal and ventral fins separate; scales ctenoid. Singapore. D. 6 | 30. A. 30.

Callionymus phaëton figured by Steindachner, *l. c.* taf. 4 (*C. morrisonii*, Risso?).

Blenniidæ.

Blennius. Dr. Steindachner describes the species found by him on his tour in the Pyrenean peninsula, Sitzgsber. Ak. Wiss. Wien, 1868, lvii. pp. 667–675; he states that *B. lupulus* and *B. varus* are the males of *B. vulgaris* (p. 670), which is figured on pl. 1. figs. 1 & 2; he figures also the common *B. pholis*, fig. 3.

Blennius truncatus. Notes by Poey, Repert. Fis.-nat. de Cuba, ii. p. 168.

Blennius vinctus, sp. n., Poey, *l. c.* p. 243, Cuba.—*Entomacrodus decoratus*, sp. n., Poey, *l. c.* p. 398, Cuba.

Petroscirtes zebra, sp. n., Bleeker, *l. c.* p. 279, Singapore. D. $\frac{1}{18}^{2}$. A. 21.—*Petroscirtes lineolatus*, sp. n., Kner, Sitzgsber. Ak. Wiss. Wien, lviii. p. 29, Feejee Islands.

Enchelyurus, g. n., Peters, Monatsber. Ak. Wiss. Berlin, 1868, p. 268. Dentition and the scaleless body as in *Petroscirtes*; gill-openings of moderate width, lateral; vertical fins confluent.—*Enchelyurus flavipes*, sp. n., Peters, *l. c.* p. 268.

Nemophis. The Recorder has recently had an opportunity of

examining nine examples obtained in various parts of the Indian Ocean, and convinced himself, 1, that *Xiphogaddus* is identical with *Nemophis* of Kaup (who overlooked the ventral fins); and, 2, that although the examples examined by him may belong to two distinct species, differing only in the extent of the snout, there is no evidence to show that the fishes described by Rüppell, Kaup, and Bleeker are specifically distinct. He makes this observation on account of Col. Playfair having described as a fourth species a *Xiphogadus madagascariensis*, Proc. Zool. Soc. 1868, p. 11. Having examined the typical example (which is in a very bad state), the Recorder may add that it cannot be made the type of a distinct species.

Salarias. Dr. Steindachner has published notes on *S. tridactylus*, *S. meleagris*, and *S. lineatus*, *l. c.* pp. 994, 996.

Salarias vomerinus. M. Guichenot regards this fish as the type of a distinct genus, *Salarichthys*. Mém. Soc. Sc. Nat. Cherbourg, xiii. 1868, pp. 96–100.

Salarias kirkii, sp. n., Günther, Ann. & Mag. Nat. Hist. 1868, i. p. 458, from Zanzibar.—*Salarias* (*Cirripectes*) *polyzona*, sp. n., Bleeker, Versl. & Meded. Ak. Wet. Amsterd. 1868, ii. p. 278, from Amboyna. D. $\frac{1}{14}$. A. 17. —*Salarias bilineatus*, sp. n., Peters, *l. c.* p. 269, Samar.—*Salarias brevis*, sp. n., Kner, Sitzgsber. Ak. Wiss. Wien, lviii. p. 29, Navigator Islands.

Myxodes macropus, sp. n., Poey, *l. c.* p. 399, Cuba.

Clinus macrocephalus figured by Günther, Trans. Zool. Soc. vi. p. 442, pl. 69. fig. 2.

[*Clinus*] *Labrosomus bucciferus*, sp. n., Poey, *l. c.* p. 399, Cuba.

Clinus veranyi (Filippi) = *Cristiceps argentatus*, according to Steindachner, *l. c.* p. 675.

Tripterygium philippinum, sp. n., Peters, *l. c.* p. 269, Luzon.

Cremnobates monophthalmus figured by Günther, *l. c.* pl. 69. fig. 1.

Centronotus quinquemaculatus, sp. n., Kner, Sitzgsber. Ak. Wiss. Wien, lviii. p. 29, Pinang.

Stichæus enneagrammus, sp. n., Kner, *l. c.* p. 30, Decastris Bay.

Zoarces elongatus, sp. n., Kner, *l. c.*, Decastris Bay.

Urocentrus pictus, g. et sp. n., Kner, Sitzgsber. Ak. Wiss. Wien, 1868, lviii. p. 30.—The length of the head nearly one-tenth of the total; mouth very oblique; teeth in the jaws and vomer in a single series; gill-opening of moderate width; ventral fins small, united.—Singapore.—D. 95. A. 1 | $\frac{1}{40}$. V. 1 | 2.

Atherinidæ.

Atherina. Dr. Steindachner describes the species found by him on his tour in the Pyrenean peninsula, Sitzgsber. Ak. Wiss. Wien, 1868, lvii. pp. 676–680, and states that *A. boyeri* is the young of *A. presbyter* (p. 677).

Mugilidæ.

Mugil. Dr. Steindachner describes the species observed by him on his tour in the Pyrenean peninsula, Sitzgsber. Ak. Wiss. Wien, 1868, lvii. pp. 680–685; he is unable to appreciate the distinction of *M. chelo* and *M. septentrionalis*.

Dr. Günther regards *Mugil güntheri* (Gill) as identical with *M. brasiliensis*, but *M. incilis* (Hancock) as distinct. Trans. Zool. Soc. vi. p. 443.

Agonostoma. Dr. Günther (*l. c.*) figures *A. microps* and *A. nasutum* on pl. 70, stating that *Dajaus elongatus* (Kner) is identical with the latter, p. 444.

Agonostoma telfairii figured by Peters, Mossamb. Flussfische, taf. 2. fig. 2.

Fistulariidæ.

Aulostoma cinereus described by Poey as a new species from Cuba, Repert. Fis.-nat. Cuba, ii. p. 386 [is one of the numerous variations of colour of *Au. coloratum*].

Gobiesocidæ.

Sicyases rubiginosus and *carneus*, spp. nn., Poey, Repert. Fis.-nat. Cuba, ii. pp. 391, 392, Cuba.

Ophiocephalidæ.

Prof. Peters prefers to reunite the *Ophiocephalidæ* and *Luciocephalidæ* with the *Labyrinthici*. Monatsber. Ak. Wiss. Berlin, 1868, p. 259.

On the peculiarity of respiration in these fishes see Mr. Day's paper mentioned below.

Ophiocephalus vagus is described as a new species from various parts of the East-Indian archipelago by Peters, Monatsber. Ak. Wiss. Berlin, 1868, p. 260.

Labyrinthici.

Mr. F. Day has made a series of experiments confirming the correctness of Mr. Boake's observation, viz. that these fishes and certain others breathe pure air as well as that contained in water (see Zool. Record, iii. p. 148). Mr. Day has made his observations chiefly on *Anabas*, *Ophiocephalidæ*, and Loaches*. He is inclined to believe that these and other fishes æstivate. Proc. Zool. Soc. 1868, pp. 274–288.

Ctenopoma multispine figured by Peters, Mossamb. Flussfische, taf. 2. fig. 3.

Aphredoderidæ.

Aphredoderus gibbosus. There is no communication between the air-bladder and œsophagus. Tellkampf, Reichert u. Du Bois-R. Arch. Anat. Phys. 1868, p. 88.

Trachypteridæ.

Gymnetrus capensis. An example is described and figured by Mr. Layard, Proc. Zool. Soc. 1868, pp. 319–322.

ACANTHOPTERYGII PHARYNGOGNATHI.

Prof. Canestrini has examined and described the Labroids of the Mediterranean, eighteen in number (Annuar. Soc. Nat. Modena, 1868, iii. pp. 101–144), following in his account chiefly

* The author describes the subvertebral air-bladder of the Loaches as "a receptacle for air."

that given in the 'Catalogue of Fishes.' Several of the species will be referred to below.

Pomacentrus. Prof. Poey gives a synopsis, with notes, of all the Cuban species of this and allied genera, Repert. Fis.-nat. Cuba, ii. p. 326 *et seqq.*, describing as new species *Pomacentrus partitus* and *analis*, p. 327, *P. dorsalis* and *dorsopunicеus*, p. 328.

Pomacentrus rectifrenum. Notes on the synonymy by Günther, Trans. Zool. Soc. vi. p. 445.

Pomacentrus amboinensis is described as a new species by Dr. Bleeker, Versl. & Meded. Ak. Wet. Amsterd. 1868, ii. p. 334, from Amboyna.

Pomacentrus unifasciatus, sp. n., Kner, Sitzgsber. Ak. Wiss. Wien, lviii. p. 31, Feejee Islands.

Glyphidodon hemimelas, sp. n., Kner, *l. c.* p. 30, Feejee Islands.

Labrus. Dr. Steindachner describes the species observed by him on his tour in the Pyrenean peninsula. Sitzgsber. Ak. Wiss. Wien, 1868, lvii. pp. 689–693. He regards *L. festivus*, *luscus*, *nereus*, *viridis*, and *prasostictus* as synonyms of *L. turdus* (figured on pl. 2. figs. 1, 2).—*Labrus donovani* figured pl. 4. fig. 1.

Prof. Canestrini (*l. c.*) figures *Labrus turdus*, pl. 6. fig. 1, *L. festivus*, fig. 2, and describes *L. lineolatus* (C. & V.), p. 115.

Crenilabrus. Dr. Steindachner has published notes on the species collected by him in the Pyrenean peninsula, *l. c.* pp. 694–698. *Cr. staitii* = *Cr. griseus*, p. 964.—*Crenilabrus quinquemaculatus* figured on pl. 3. fig. 1.

Prof. Canestrini (*l. c.*) figures *Crenilabrus mediterraneus*, pl. 6. f. 3, *C. roissali*, pl. 7. fig. 2, *C. ocellatus*, fig. 1, *C. tinca*, fig. 3; and gives a description of *C. melanocercus* (Risso), p. 122.

Ctenolabrus cinereus (Pall.) and *Ct. acutus* (C. & V.) = *Ctenolabrus rupestris*, Steindachner, *l. c.* p. 698.

Chœrops anchorago (Bl.) and *Ch. macrodon* (Blkr.) are stated by Peters to be identical. Monatsber. Ak. Wiss. Berl. 1868, p. 270.

Cossyphus atrolumbus described by Steindachner, *l. c.* p. 997.

Cossyphus scrofa is referred to *Trochocopus* and figured by Steindachner, *l. c.* p. 999, taf. 3. fig. 2.

Platyglossus modestus (Blkr.) = *Labrus gymnocephalus* (Bl. Schn.), Peters, Monatsber. Ak. Wiss. Berlin, 1868, p. 270.

Platyglossus dispilus figured by Günther, Trans. Zool. Soc. vi. pl. 74. fig. 1.

Pseudojulis notospilus figured by Günther, *l. c.* pl. 66. fig. 2.

Novacula sanctæ helenæ, sp. n., Günther, Proc. Zool. Soc. 1868, p. 228, St. Helena.

Xyrichthys vermiculatus. Notes by Poey, Repert. Fis.-nat. Cuba, ii. p. 238.—*Xyrichthys modestus*, sp. n., Poey, *l. c.* p. 336.

Coris julis and *giofredi* are regarded as one and the same species by Canestrini, *l. c.* p. 138.—*Coris julis* is the male and *C. giofredi* the female of the same species, Steindachner, *l. c.* p. 701, taf. 3. figs. 2 & 3.

Scarus. Prof. Poey is of opinion that *Sc. chloris* of Bloch Schneid. is not a *Pseudoscarus* but a *Scarus*; he describes also his *Scarus distinctus*, Repert. Fis.-nat. Cuba, ii. pp. 162, 163.—The same author reviews all the Cuban species of this genus, ibid. p. 336 *et seqq.*, describing as new *Sc. truncatus*, p. 339, *Sc. emarginatus*, p. 340, and *Sc. oxybrachius*, p. 342.

Scarus rubiginoides (Guich.) is referred to the synonymy of *Sc. cretensis* by Steindachner, *l. c.* p. 702.

Calliodon. Prof. Poey, *l. c.* p. 344 *et seqq.*, describes the Cuban species, adding as new *C. retractus*, p. 345.

Pseudoscarus. Prof. Poey describes his *Sc. rostratus*, and thinks that his *Sc. miniofrenatus* is identical with *Sc. aurofrenatus* (C. & V.). *L. c.* pp. 163, 164.—He describes two new species, viz. *Ps. lineolatus*, p. 239, and *Ps. gnathodus*, p. 240.—The same author gives a synopsis of all the Cuban species, *l. c.* pp. 346-350.

Pseudoscarus russellii (C. & V.) described by Mr. Day, Proc. Zool. Soc. 1868, p. 154.

Pseudoscarus spilonothus and *Pseudoscarus spinus*, spp. nn., Kner, Sitzgsber. Ak. Wiss. Wien, lviii. p. 31, Feejee Islands.

Embiotocidæ. Mr. Blake has examined the anal-fin appendages in Embiotocoid Fishes. Journ. Anat. & Phys. iii. p. 30.

Gerres. Prof. Peters has found the pharyngeal bones separate in *Gerres plumieri* as well as several East-Indian species. Monatsber. Ak. Wiss. Berlin, 1868, p. 257.

Gerres. Notes on the Cuban species by Poey, Repert. Fis.-nat. Cuba, ii. p. 320 *et seqq.*

Chromis mossambicus. This fish, as well as *Chr. sparrmanni*, are regarded by Peters as identical with *Chr. niloticus*, Mossamb. Flussf. p. 23. Figured on taf. 4. figs. 1–4.

Tilapia oligacanthus, sp. n., Bleeker, Versl. & Meded. Ak. Wet. Amsterd. 1868, ii. p. 309, Madagascar.

Paratilapia, g. n., Bleeker, *l. c.* p. 307. Corpus oblongum compressum squamis magnis ctenoideis (29 vel 30 in serie longitudinali) vestitum, squamis operculo quadriseriatis, genis sexseriatis, interoperculo bi- ad triseriatis. Dentes maxillis conici acuti curvati tri- ad quadriseriati, serie externa ceteris multo fortiores. Nares utroque latere simplices. Præoperculum edentulum. Processus arcus branchialis externi ossei oblongi distantes serrati. Os pharyngeale inferius triangulare linea media sutura debili simplex, margine posteriore concavum. Dentes pharyngeales compressi apice conici infra apicem emarginati. Linea lateralis interrupta tubulis simplicibus notata. Pinnæ dorsalis et analis alepidotæ, dorsalis spinis 12, analis spinis 3.—*Paratilapia polleni*, sp. n., Bleeker, *l. c.* p. 308, Northern Madagascar.

Paretroplus, g. n., Bleeker, *l. c.* p. 311. Corpus oblongum valde compressum, squamis cycloideis mediocribus (37 circiter) in serie longitudinali. Dentes maxillis uniseriati conici obtusi non lobati. Præoperculum edentulum. Squamæ genis 4-seriatæ. Os pharyngeale inferius triangulare linea media sutura solida simplex. Dentes pharyngeales ex parte apice conici, ex parte apice obtusi concavi. Linea lateralis tubulis simplicibus notata lateribus caudaque conspicua. Pinnæ dorsalis et analis basi vagina squamosa inclusæ, dorsalis spinis 18 vel 19, analis spinis 9. Processus arcus branchialis externi cornei conici breves.—*Paretroplus damii*, sp. n., Bleeker, *l. c.* p. 313, from Madagascar.

Heros. Beside the well-known Central-American species, Dr. Günther describes and figures the following in Trans. Zool. Soc. vi.:—*H. margaritifer*, pl. 71. fig. 2; *H. melanurus*, pl. 72. fig. 3; *H. spilurus*, pl. 73. fig. 1; *H. nigrofasciatus*, sp. n., p. 452, pl. 74. fig. 3 *H. multispinosus*, sp. n., p. 453,

pl. 74. fig. 2; *H. longimanus*, sp. n., p. 453, pl. 72. fig. 2; *H. urophthalmus*, pl. 72. fig. 1; *H. aureus*, pl. 73. fig. 2; *H. affinis*, pl. 79. fig. 1.; *H. erythræus*, sp. n., p. 457, pl. 75. fig. 2; *H. lobochilus*, sp. n., p. 457, pl. 75. fig. 1; *H. citrinellus*, pl. 71. fig. 1; *H. salvini*, pl. 73. fig. 3; *H. trimaculatus*, sp. n., p. 461, pl. 76; *H. dovii*, pl. 73. fig. 4; *H. montaguensis*, sp. n., p. 462, pl. 77. fig. 2; *H. managuensis*, sp. n., p. 463, pl. 77. fig. 3; *H. oblongus*, sp. n., p. 464; *H. nicaraguensis*, pl. 77. fig. 1; *H. godmanni*, pl. 74. fig. 5; *H. guttulatus*, pl. 78. fig. 3; *H. irregularis*, pl. 78. fig. 2; *H. intermedius*, pl. 78. fig. 1; *H. angulifer*, pl. 85. fig. 1.

Petenia splendida figured by Günther, *l. c.* pl. 79. fig. 2.

Neetroplus, g. n., Günther, *l. c.* p. 469, differing from *Heros* in having a front series of flat incisor-like teeth.—*N. nematopus*, sp. n., Günther, *l. c.* p. 470, pl. 74. fig. 4.

ANACANTHINI.

Gadoidei.

Gadus morrhua. Hr. G. O. Sars has observed that Codfish deposit their spawn at the surface of the water, where the ova float throughout the whole of their development. Nyt Magaz. for Naturvid. 1866; and Ann. & Mag. Nat. Hist. 1868, ii. p. 389. The same observation is contained in an article in Forh. Vid.-Selsk. Christ. 1866, pp. 237–249, in which the author follows up the development of the ovum and of the young during the first fortnight after exclusion. The embryo leaves the ovum on the sixteenth day.

Gadus merlangus=*G. euxinus*, and *Gadus minutus*=*G. luscus*, according to Steindachner, Sitzgsber. Ak. Wiss. Wien, 1868, lvii. p. 703.

Motella maculata=*M. tricirrata*, adult, according to Steindachner, *l. c.* p. 710.

Brotula barbata. Notes by Poey, Repert. Fis.-nat. Cuba, ii. pp. 168, 401.

Brotula maculata, sp. n., Day, Proc. Zool. Soc. 1868, p. 196, Madras.

Ammodytes siculus figured by Steindachner, Sitzgsber. Ak. Wiss. Wien, 1868, lvii. p. 712, tab. 2. fig. 3.

Pleuronectoidei.

Prof. Schiödte's paper "On the change in the position of the Eye in *Pleuronectidæ*" [see Zool. Record, iv. pp. 153, 169] is translated in Ann. & Mag. Nat. Hist. 1868, i. pp. 378–383.

The change in the position of the eye in Pleuronectoids has again been made the subject of a very important publication by Hr. A. W. Malm, in Svensk. Vet. Akad. Handl. vii. no. 4, 1868, pp. 28 (read Sept. 8th, 1867). Indeed the author was one of the first who made researches into the subject, his former publication being in Œfvers. Svensk. Vet. Ak. Förh. for 1854, p. 173. For the subsequent papers by other authors, we refer to Zool. Record, i. p. 161, ii. p. 197, and iv. p. 169. In the present treatise the author controverts the opinion of Steenstrup (who stated Van Beneden's fish to be a young *Gunellus*, and Malm's specimen a malformed Pleuronectoid), and also proves

that the change of position of the eye is not effected by its breaking through the skull. Further, he shows that Traquair was mistaken when he believed he had found a real asymmetry of the Pleuronectoid and Gadoid skulls in the supposed absence of the additional processes of the os frontis anterius and proprium.

After having shown that Van Beneden's "Turbot" was really a young Pleuronectoid, the author proceeds to a detailed description of those parts of the skull which are most subject to transformation. He examines the skulls of the various European Pleuronectoids, and illustrates his text by neat figures of the skulls of the Plaice and *Raniceps*, in which the homologous parts are marked with identical numbers, from which it appears that the Pleuronectoid skull is only apparently asymmetrical. This is confirmed by the author's researches into the development of the embryo of the Flounder, the first stages of which are described (p. 15) and figured (pl. 1. figs. 3–6).

The author then describes very young *Pl. limanda*, *Solea vulgaris*, and *Rhombus vulgaris*, of from 12 to 24 millims. in length, of which he observed a considerable number in a living state, and we regret much that we cannot enter into the details of these highly interesting observations.

On p. 24 the author gives a very simple explanation of the abnormal condition of Pleuronectoids. The young Pleuronectoid is forced by the excesssive depth of its body, enlarged by the development of the vertical fins, to lie on one side when resting on the ground. Neither the horizontal fins nor the air-bladder are sufficiently developed to sustain it in a vertical position as is the case in other fishes. The eye of the "blind" side has a tendency to turn towards the light; and this eye carries at the same time the surrounding parts of the head with it, which is a matter of but little difficulty whilst the framework of the head is still cartilaginous. A commencing similar obliquity may be observed sometimes in a slight degree in very young examples of other fishes; and the author has found a very conspicuous obliquity in the skull of an example of *Lepidopus*.

With regard to Steenstrup's "*Plagusiæ*," Hr. Malm doubts their pertinence to that genus, and thinks that also in this case the change of the eye may have taken place in the same manner as in other Pleuronectoids.

The Recorder may add that Hr. Malm has informed him that he has read a paper on the same subject before the meeting of Scandinavian naturalists in Christiania, 1868, in which he accounts for the frequent occurrence of sinistral specimens of the Flounder by the fact that this species lives close inshore, and, therefore, is more exposed to the motions of the water than the other flatfishes; consequently individuals will frequently be

forced to a position on the right side. Such specimens are also more frequently found at certain localities than at others.

As many zoologists take great interest in this subject, we hope that Hr. Malm's paper will soon be translated and accessible in its complete form.

Dr. v. KLEIN has also given a description of the skull of the common European types of *Pleuronectidæ*. He examines critically the views held by Steenstrup, Van Beneden, and Schiödte, and thinks that the upper eye never changes its relative position to the surrounding parts, and that a rotation of the fore part of the skull takes place. Württ. ntrw. Jahresh. 1868, pp. 271–308.

Prof. POEY gives a synopsis of the Cuban species of *Pleuronectidæ*, Repert. Fis.-nat. Cuba, ii. pp. 406–410.

Rhombus mæoticus is regarded as identical with *Rh. maximus* by Dr. Steindachner, Sitzgsber. Ak. Wiss. Wien, 1868, lvii. p. 714.

Citharichthys spilopterus figured by Günther, Trans. Zool. Soc. vi. p. 471, pl. 80. fig. 2.

Hemirhombus ovalis figured by Günther, *l. c.* pl. 80. fig. 1.

Hemirhombus fuscus, sp. n., Poey, *l. c.* p. 406, Cuba.

Pseudorhombus vorax (Gthr.) = *Hippoglossus brasiliensis* (Ranz.), Günther, *l. c.* p. 473.

Rhomboidichthys podas is the female, *Rh. mancus* the male of the same species, according to Steindachner, *l. c.* p. 717.

Rhomboidichthys spinosus, sp. n., Poey, *l. c.* p. 409, Cuba.

Pleuronectes flesus, *luscus*, and *italicus* are considered to be the same species by Steindachner, *l. c.* p. 719.

Pleuronectes gilli, sp. n., Steindachner, *l. c.* p. 1004, Glacial Ocean.

Solea. Dr. Steindachner has published notes on the species collected by him on the coasts of the Pyrenean peninsula (*l. c.* pp. 720–727); he regards *S. azevia* (Capello) as not specifically distinct from *S. vulgaris* (p. 720, tab. 5), but describes as a new species *Solea capellonis* (p. 722, tab. 4).

– *Apioniehthys ottonis*, sp. n., Steindachner, *l. c.* p. 1005, Sicily.

PHYSOSTOMI.

SILURIDÆ.

Clarias. The fish named *Cl. mossambicus* by Peters is described in detail by him in Mossamb. Flussfische, p. 32, and figured on tafs. 6 & 7. figs. 2, 3. He shows that the number of dorsal rays and the form of the vomerine band of teeth is subject to variation.

Heterobranchus laticeps described and figured by Peters. Mossamb. Flussfische, p. 37, taf. 7. fig. 1.

Silurus glanis. Hr. Bruhin directs attention to a statement of Hartmann, that in the year 1498 three examples were caught in the Lake of Constance. Verh. zool.-bot. Ges. Wien, 1868, p. 258.—Dr. Vouga believes that this fish is electric. Act. Soc. Helvet. Sc. Nat. Neuchatel, 1866, p. 98.

Silurus punctatus, sp. n., Day, Proc. Zool. Soc. 1868, p. 155, from the Wynaad.

Eutropius depressirostris figured by Peters, Mossamb. Flussfische, taf. 4. fig. 5.

Amiurus meridionalis figured by Günther, Trans. Zool. Soc. vi. p. 473, pl. 81. fig. 1.

Noturus. Mr. Cope has referred specimens in the collection of the Philadelphia Academy to three species, which he shortly characterizes. Journ. Ac. Nat. Sc. Philad. 1868, vi. p. 237.

Pimelodus managuensis, sp. n., Günther, *l. c.* p. 474, from the Lake of Managua. The same author names the *P. cinerascens* (Kner, not Gthr.) *P. wagneri*, ibid.

Arius assimilis described by Günther and compared with *Hexanematichthys hymenorrhinus* (Blkr.), *l. c.* p. 475.

Arius granulatus, sp. n., Peters, Monatsber. Ak. Wiss. Berlin, 1868, p. 454, Lagos.

Ælurichthys nuchalis figured by Günther, *l. c.* pl. 81. fig. 2.

Doras helicophilus, sp. n., Günther, Proc. Zool. Soc. 1868, p. 229, Surinam.

Oxydoras acipenserinus, sp. n., Günther, *l. c.* p. 230, pl. 20, Upper Amazons.

Chiloglanis, g. n., Peters, *l. c.* p. 599. Distinguished from *Synodontis* in having dilated lips, the upper being provided with teeth.—*Ch. deckenii*, sp. n., *l. c.*, with figure, from East Africa.

Synodontis zanzibaricus is described as a new species by Peters, *l. c.* p. 600.

Synodontis nebulosus and *zambesensis* are described and figured by Peters, Mossamb. Flussfische, pp. 28 & 31, taf. 5. figs. 1 & 2–3.

Malapterurus. Prof. Peters has come to the conclusion that there is one species only in the rivers of Africa. Mossamb. Flussfische, p. 41; and Monatsber. Ak. Wiss. Berl. 1868, pp. 121–124.

Callichthys armatus, sp. n., Günther, *l. c.* p. 230, fig. 1, Upper Amazons.—*Callichthys arcifer*, from Rio Janeiro, and *C. hemiphractus*, fron Costa da Serra, spp. nn., Hensel, Wiegm. Arch. 1868, pp. 373, 374.

Plecostomus barbatus. Dr. Günther observes that the long bristles on the margin of the snout and the interoperculum are a sexual character peculiar to the male. Proc. Zool. Soc. 1868, p. 232.

Chætostomus. Dr. Günther (Proc. Zool. Soc. 1868) has described the following new species:—*Ch. fordii*, p. 231, pl. 21; *Ch. depressus* and *Ch. megacephalus*, p. 232, from Surinam; *Chætostomus dentex*, p. 233, from the Upper Amazons.—*Chætostomus aspidolepis*, sp. n., Günther, Trans. Zool. Soc. vi. p. 477, Veragua.

Chætostomus hystrix (Vandelli) is described and figured by M. Capello in Jorn. Sc. math. phys. e nat. Lisboa, 1868, v. p. , pl. 7.

Acanthicus hystrix has no adipose fin, Günther, Proc. Zool. Soc. 1868, p. 234.

Hypoptopoma (g. n. Hypostomat.), Günther, Proc. Zool. Soc. 1868, p. 234. This genus differs from *Plecostomus* in the peculiar formation of the head, which is depressed, spatulate, the eyes being on the lateral edge of the head. The moveable gill-covers are reduced to two bones, viz. the operculum, small and placed as in *Plecostomus*, and a second, larger bone (interoperculum ?), separated from the eye by the narrow suborbital ring, and placed

at the lower side of the head.—*H. thoracatum*, sp. n., Günther, *l. c.* fig. 2, from the Upper Amazons.

Loricaria. Dr. Günther, *l. c.*, describes three new species:—*L. platystoma*, p. 236, figs. 4 & 5, from Surinam; and *L. lanceolata*, p. 235, fig. 3, and *L. lamina*, p. 239, figs. 6 & 7, from the Upper Amazons.—Dr. Hensel describes two new species, *L. strigilata*, Wiegm. Arch. 1868, p. 368, and *L. cadeæ*, p. 369, from Southern Brazil. He describes also *L. lima* (Kner), p. 366.

Loricaria rostrata. Dr. Günther makes remarks on its synonymy, and observes that the male is distinguished from the female by a bearded snout. *L. c.* p. 235.

Scopelidæ.

Saurus. On the Cuban species, see Poey, Repert. Fis.-nat. Cuba, ii. pp. 413–415.

Saurus griseus, figured by Steindachner, Sitzgsber. Ak. Wiss. Wien, 1868, lvii. p. 728, taf. 6. fig. 2.

Aulopus filamentosus figured by Steindachner, *l. c.* fig. 1.

Paralepis intermedius, sp. n., Poey, *l. c.* p. 416, Cuba.

Cyprinidæ.

Dr. Günther has treated of this family in the seventh volume of his 'Catalogue of Fishes.' A revision of all the species known has convinced him that a great number of generic divisions proposed by preceding authors are based on characters which must appear trivial when the entire series is examined, and not a small portion only, like the Cyprinoids of a certain fauna. The arrangement proposed by him is the following:—

First Group. Catostomina.

1. *Catostomus* (Lesueur) with 29 species.
2. *Moxostoma* (Agass.) with 5 species.
3. *Sclerognathus* (Gthr.) with 11 species: *Sclerognathus meridionalis*, sp. n., from Central America (p. 23).
4. *Carpiodes* (Agass.) with 1 species.

Second Group. Cyprinina.

5. *Cyprinus* (auct.) with 3 species.
6. *Carassius* (Nilss.) with 3 species.
7. *Catla* (C. & V.) with 1 species.
8. *Cirrhina* (Cuv.) with 12 species: *Cirrhina chinensis*, sp. n., p. 36.
9. *Dangila* (Gthr.) with 7 species.
10. *Osteochilus* (Gthr.) with 17 species.
11. *Labeo* (Cuv.) with 43 species, two being new, viz. *Labeo brachypoma*, from West Africa (p. 50), and *Labeo mesops*, from East Africa (p. 51).
12. *Barynotus* (g. n.) with *B. lugensis* (sp. n.), from Lagos (p. 61), and *B. microlepis* (Bllkr.).
13. *Tylognathus* (Gthr.) with 16 species, two being new, viz. *T. striolatus*, from Poona (p. 62), and *T. elegans*, from Mesopotamia (?) (p. 64).
14. *Abrostomus* (Smith) with 4 species.

15. *Discognathus* (Heck.) with 6 species: *D. macrochir*, sp. n., from Assam (p. 70).

16. *Crossochilus* (v. Hass.) with 10 species; *Crossochilus rostratus*, sp. n., Cossye River (p. 72).

16*a*. *Gymnostomus* (Heck.) with 7 species.

17. *Epalzeorhynchus* (Blkr.) with 1 species.

18. *Capoeta* (C. & V.) with 18 species: *Capoeta microcanthus*, sp. n., from Bootan (p. 81).

19. *Barbus* (Gthr.) with 197 species, the following being new:—*B. subquincunciatus*, Mesopotamia? (p. 86); *B. sclateri*, Guadalquivir (p. 93); *B. beavani*, Kossye River (p. 96); *B. paradoxus*, Formosa (p. 97); *B. welwitschii*, Angola (p. 101); *B. gürneyi*, Natal (p. 102); *B. argenteus*, Angola (p. 103); *B. caudimacula*, Angola (p. 107); *B. fasciolatus*, Angola (p. 108); *B. beddomii*, Palestine (p. 110); *B. laoensis*, Cochin China (p. 115); *B. collingwoodii*, Borneo (p. 483); *B. altus*, Siam (p. 119); *B. russellii*, Indus (p. 121); *B. microps*, Java (p. 124); *B. longispinis*, Ceylon (p. 132); *B. semifasciolatus*, China (pp. 140, 484); *B. sophoroides*, Bengal (p. 144); *B. layardi*, Ceylon (p. 144); *B. cumingii* and *B. nigrofasciatus*, Ceylon (p. 155).

20. *Thynnichthys* (Blkr.) with 3 species.

21. *Barbichthys* (Blkr.) with 1 species.

22. *Amblyrhynchichthys* (Blkr.) with 1 species.

23. *Albulichthys* (Blkr.) with 1 species.

24. *Oreinus* (M'Clell.) with 6 species.

25. *Schizothorax* (Gthr.) with 20 species.

26. *Ptychobarbus* (Steindachner) with 1 species.

27. *Gymnocypris* (g. n.) *dobula* (sp. n.), hab. —?, p. 169.

28. *Schizopygopsis* (Steindachner) with 1 species.

29. *Diptychus* (Steindachner) with 1 species.

30. *Aulopyge* (Heck.) with 1 species.

31. *Gobio* (Cuv.) with 3 species.

32. *Pseudogobio* (Gthr.) with 5 species: *Pseudogobio brevirostris*, sp. n., from Formosa (p. 174).

33. *Ceratichthys* (Baird & Gir.) with 14 species, three being new, viz. *C. sallæi*, Mexico (p. 484), *C. cumingii*, California (p. 177), and *C. hyalinus* (Cope), Holston River (p. 179).

34. *Bungia* (Keyserling) with 1 species.

35. *Pimephales* (Agass.) with 3 species.

36. *Hyborhynchus* (Agass.) with 1 species.

37. *Campostoma* (Agass.) with 8 species.

38. *Hybognathus* (Agass.) with 22 species.

39. *Ericymba* (Cope) with 1 species.

40. *Pseudorasbora* (Blkr.) with 1 species.

41. *Cochlognathus* (Baird and Gir.) with 1 species.

42. *Evoglossum* (Rafinesque) with 2 species.

43. *Rhinichthys* (Agass.) with 12 species.

Third Group. RHOTEICHTHYINA.

44. *Rhoteichthys* (Blkr.) with 1 species.

Fourth Group. LEPTOBARBINA.

45. *Leptobarbus* (Blkr.) with 1 species.

Fifth Group. RASBORINA.

46. *Rasbora* (Blkr.) with 13 species.
47. *Luciosoma* (Blkr.) with 3 species.
48. *Nuria* (C. & V.) with 3 species.
49. *Aphyocypris* (g. n.) *chinensis* (sp. n.), p. 201.
50. *Amblypharyngodon* (Blkr.) with 3 species.

Sixth Group. SEMIPLOTINA.

51. *Cyprinion* (Heck.) with 3 species.
52. *Semiplotus* (Blkr.) with 1 species.

Seventh Group. XENOCYPRIDINA.

53. *Xenocypris* (g. n.) *argentea* (sp. n.), China, p. 205.
54. *Paracanthobrama* (Blkr.) with 1 species.
55. *Mystacoleucus* (g. n., p. 206) *padangensis* (Blkr.).

Eighth Group. LEUCISCINA.

56. *Leuciscus* (auct.) with 187 species, the following being new:—*L. pyrenaicus*, Portugal (p. 223); *L. fellowesii*, Xanthus (p. 224); *L. vanensis*, Lake Van (p. 236); *L. telescopus* (Cope), Virginia (p. 252); *L. coccogenis* (Cope), Virginia (p. 253); *L. ardens* (Cope), Virginia (p. 257); *L. boucardi*, Mexico (p. 485); *L. lineolatus*, Osage River (p. 259).
57. *Ctenopharyngodon* (Steindachner) with 1 species.
58. *Mylopharodon* (Ayres) with 1 species.
59. *Paraphoxinus* (Blkr.) with 2 species.
60. *Meda* (Girard) with 1 species.
61. *Tinca* (Cuv.) with 1 species.
62. *Leucosomus* (Heck.) with 16 species.
63. *Chondrostoma* (Agass.) with 11 species.
64. *Orthodon* (Girard) with 1 species.
65. *Acrochilus* (Agas.) with 1 species.

Ninth Group. RHODEINA.

66. *Achilognathus* (Blkr.) with 6 species, two of which are new, *A. himantegus*, from Formosa (p. 277), and *A. imberbis*, from China (p. 278).
67. *Rhodeus* (Agass.) with 3 species: *Rhodeus sinensis*, sp. n. (p. 280).
68. *Pseudoperilampus* (Blkr.) with 1 species.

Tenth Group. DANIONINA.

69. *Danio* (Gthr.) with 12 species.
70. *Pteropsarion* (g. n., p. 284) with 3 species; type *Barilius bakeri* (Day).
71. *Aspidoparia* (Heck.) with 5 species.
72. *Barilius* (Gthr.) with 28 species, four of which are new, viz. *B. radiolatus*, Central India (p. 287), *B. alburnus*, Himalayas (p. 289), *B. morarensis*, Gwalior (p. 290), and *B. sardella*, East Africa (p. 292).
73. *Bola* (g. n., p. 293) with 2 species; type *Cyprinus bola* (H. B).
74. *Schacra* (g. n., p. 294) with *Cyprinus schacra* (H. B.)
75. *Opsariichthys* (Blkr.) with 5 species: *Opsariichthys pachycephalus*, sp. n., Formosa (p. 296).
76. *Squaliobarbus* (g. n., p. 296) *curriculus* (Richards.).
77. *Ochetobius* (g. n., p. 298) *elongatus* (Kner).

Eleventh Group. Hypophthalmichthyina.

78. *Hypophthalmichthys* (Blkr.) with 2 species.

Twelfth Group. Abramidina.

79. *Abramis* (Cuv.) with 31 species.

80. *Aspius* (Agass.) with three species: *Aspius spilurus*, sp. n., from China (p. 311).

81. *Alburnus* (Gthr.) with 24 species.

82. *Leucaspius* (Heck.) with 1 species.

83. *Rasborichthys* (Blkr.) with 1 species.

84. *Elopichthys* (Blkr.) with 1 species.

85. *Pelotrophus* (Gthr.) with 2 species.

86. *Acanthobrama* (Heck.) with 3 species.

87. *Osteobrama* (Heck.) with 5 species: *Osteobrama rapax*, sp. n., from Northern India (p. 323).

88. *Chanodichthys* (Blkr.) with 10 species: *Chanodichthys macrops*, sp. n., from Formosa (p. 326).

89. *Smiliogaster* (Blkr.) with 1 species.

90. *Culter* (Blkr.) with 7 species: *Culter brevicauda*, sp. n., from Formosa (p. 329).

91. *Pelecus* (Agass.) with 1 species.

92. *Eustira* (g. n.) *ceylonensis* (sp. n., p. 331).

93. *Chela* (H. B.) with 26 species, one being new, viz. *Ch. siamensis* (p. 336).

94. *Pseudolaubuca* (Blkr.) with one species.

95. *Cachius* (g. n., p. 339) *atpar* (H. B.)

Thirteenth Group. Homalopterina.

96. *Homaloptera* (v. Hass.) with 12 species.

97. *Psilorhynchus* (M'Clell.) with 2 species.

Fourteenth Group. Cobitidina.

98. *Misgurnus* (Lacép) with 6 species:—*Misgurnus lateralis*, sp. n., from Bengal (p. 346).

99. *Nemachilus* (v. Hass.) with 55 species, the following being new, viz.:—*N. urophthalmus*, Ceylon (p. 348); *N. beavani*, Kossye River (p. 350); *N. ladacensis*, Tibet (p. 356); *N. griffithii*, Assam (p. 360).

100. *Cobitis* (Artedi) with 7 species.

101. *Lepidocephalichthys* (Blkr.) with 3 species.

102. *Acanthopsis* (v. Hass.) with 2 species.

103. *Botia* (Gray) with 10 species: *Botia rostrata*, sp. n., from Bengal (p. 367).

104. *Oreonectes* (g. n.) *platycephalus* (sp. n.), China (p. 369).

105. *Lepidocephalus* (Blkr.) with 1 species.

106. *Acanthophthalmus* (Blkr.) with 2 species.

107. *Apua* (Blyth) with 1 species.

Aperioptus pictorius (Richards.).

A separate family is appended to the *Cyprinidæ* under the name of Kneriidæ: it is founded upon *Kneria* (Steindachner); and a second species is added, *Kneria spekii*, from Central Africa, pp. 371–372.

Catostomus. The fish named by Mr. Cope (*Ptychostomus*) *Teretulus cervinus* is figured by him in Journ. Ac. Nat. Sc. Philad. 1868, vi. p. 236.

Labeo. Peters (Mossamb. Flussfische) has described the three species distinguished by him:—*L. altivelis*, p. 43, taf. 8 [this is characterized by fringed lips], *L. congoro*, p. 45, taf. 9, and *L. cylindricus*, p. 47, taf. 10. fig. 1. [See on the two latter species Günth. Fish. vii. pp. 48 & 50.]

Barbus. Prof. Peters (Mossamb. Flussfische) describes and figures the following species:—*Labeobarbus zambezensis*, p. 49, taf. 10. fig. 2; *B. paludinosus*, p. 51, taf. 11. f. 1; *B. gibbosus*, p. 52, taf. 11. f. 2; *B. inermis*, p. 54, taf. 11. f. 3; *B. trimaculatus*, p. 55, taf. 11. f. 4; and *B. radiatus*, p. 56, taf. 10. f. 3.

Barbus kerstenii and *B. zanzibaricus*, spp. nn., Peters, Monatsb. Ak. Wiss. Berlin, 1868, p. 601, from East Africa.

Barbus graellsii (Steind.)=*B. guiraonis* (Steind.). See the pamphlet of this author noticed above (p. 133). [Most probably=*B. caninus*.]

Mr. F. Day describes four species as new from Kurnool, Proc. Zool. Soc. 1868, viz.:—*Barbus neilli*, p. 581 [very closely allied to *B. carnaticus*], *B. yuentheri*, p. 582 [=*B. kolus*, Sykes], *B. ambassis*, p. 583, and *B. nashii*, p. 584.—The same author states that *Cirrhinus fasciatus* of Jerdon is the *Barbus melanampyx* of Day, and that *B. arulius* of Jerdon is a distinct species. [If this be the fact, it will prove that no reliance whatever can be placed on the generic distinctions used by Mr. Jerdon, who will have referred two most closely allied species to two genera. However, we must first wait for an examination of the typical examples which served for Mr. Jerdon's notes, before we accept Mr. Day's determination, which is not in accordance with the characters given in Mr. Jerdon's descriptions.]

Puntius (*Capoeta*) *lepidus* and *Puntius* (*Capoeta*) *puckelli*, spp. nn., Day, *l. c.* pp. 196, 197, from the Bowany River and Bangalore.—The same author describes *Barbus sophore*, p. 198.

Ceratichthys hyalinus and *C. monacus*, spp. nn., Cope, Journ. Ac. Nat. Sc. Philad. vi. 1868, pp. 226, 227, pl. 23. figs. 1, 2, from the Holston River, Virginia.

Hyborhynchus. One of the specimens named by Mr. Cope, *H. superciliosus*, is figured, *l. c.* p. 234, pl. 23. fig. 4.

Rhinichthys obtusus (Agass.) is figured by Cope under the name of *Rh. lunatus*, *l. c.* p. 228, pl. 23. fig. 3.

Phoxinus hispanicus. Dr. Steindachner states in his pamphlet (see p. 133) that this species has only one series of pharyngeal teeth.

[*Leuciscus.*] *Clinostomus affinis.* Notes on this fish by Cope, *l. c.* p. 228.—The same author gives figures of *Hypsilepis coccogenis*, ibid. pl. 23. fig. 5, *Hypsilepis ardens*, fig. 6, and of his *Hypsilepis galacturus*, pl. 22. fig. 4; also of *Photogenis telescopus*, pl. 22. fig. 6, and *Photogenis scabriceps* *, fig. 5. As new species are described by him:—*Hybopsis longiceps*, p. 231; *Hybopsis spectrunculus*, p. 231, pl. 22. fig. 3; *Hybopsis rubricroceus*, p. 231, pl. 24. fig. 4; and *Hybopsis lacertosus*, p. 232; *Alburnellus micropteryx*, p. 233; *Chrosomus oreas*, p. 233, pl. 23. fig. 7: all from South-western Virginia.

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* This is nothing but a *Ceratichthys biguttatus*, as I have convinced myself by a renewed examination of typical examples. No character can be discovered by which a specific distinction is warranted, much less a generic.

Phenacobius teretulus and *Ph. uranops* are figured by Cope, *l. c.* pl. 22. figs. 1 & 2. [See Zool. Record, iv. p. 172.]

Chondrostoma. Dr. Steindachner states in the pamphlet noticed above (see p. 133) that the species described by him as *Leucisci*, viz. *L. arriyonis* and *L. lemmingii*, belong to this genus.

Chondrostoma rhodanensis (Blanchard) = *Ch. cærulescens* (Blanch.) = *Ch. dremæi* (Blanch.) = *Ch. miegii* (Steind.), Steindachner, *l. c.*

Danio lineatus, sp. n., Day, Proc. Zool. Soc. 1868, p. 198, Madras.

[*Barilius*] *Opsaridium zambezense* figured by Peters, Mossamb. Flussfische, p. 58, taf. 11. fig. 5.

Homaloptera rotundicauda, sp. n., Martens, Monatsber. Ak. Wiss. Berlin, 1868, p. 608, from Hongkong.—Distinguished from all the other species by having four pairs of barbels, and regarded as the type of a distinct subgenus, *Octonema*.

Characinidæ.

Erythrinus cinereus (Gill) probably = *E. unitæniatus* (Spix), Günther, Proc. Zool. Soc. 1868, p. 239.

Curimatus. Dr. Günther (*l. c.*) describes three new species from the Upper Amazons:—*C. leuciscus*, p. 239; *C. asper*, p. 243, fig. 8; and *C. dobula*, p. 243.

Hemiodus kappleri, sp. n., Günther, *l. c.* p. 244, Surinam.

Leporinus. Dr. Günther, *l. c.* p. 244, makes remarks on the dentition of young examples, and describes *Leporinus hypselonotus*, sp. n., from the Upper Amazons, pl. 22.

Leporinus macrolepidotus, sp. n., Peters, Monatsber. Ak. Wiss. Berlin, 1868, p. 455, Rio de Janeiro.

Alestes acutidens and *imberi* are described by Peters, Mossamb. Flussfische, pp. 64 & 66, pl. 12. figs. 2 & 3.

Tetragonopterus. M. Bocourt indicates six species from Central America as new, viz. *T. cobanensis*, *T. oaxanensis*, *T. nitidus*, *T. fulgens*, *T. finitimus*, and *T. belizianus*. Ann. Sc. Nat. 1868, ix. p. 62.

Tetragonopterus ovalis, sp. n., Günther, Proc. Zool. Soc. 1868, p. 245.

Aphyocharax, g. n. Tetragonopter., Günther, *l. c.* p. 245. Technically distinguished from *Chirodon* by the presence of maxillary teeth.—*Aphyocharax pusillus*, sp. n., from the Upper Amazons.

Chalcinopsis dentex figured by Günther, Trans. Zool. Soc. vi. p. 478, pl. 82. fig. 1.

Anacyrtus guatemalensis figured by Günther, *l. c.* pl. 82. fig. 4.

Anacyrtus affinis and *Anacyrtus* (*Cynopotamus*) *amazonum*, spp. nn., Günther, Proc. Zool. Soc. 1868, p. 246, from the Upper Amazons.—*Cynopotamus* is rejected as genus.

Salminus. A skull, named *S. orbignyanus*, is described by Dr. Hensel, Wiegm. Arch. 1868, p. 356.

Hydrocyon. From an examination of five examples, Prof. Peters is inclined to regard *H. brevis* and *H. lineatus* as not specifically distinct from *H. forskalii*. Mossamb. Flussfische, p. 69.

Cynodon pectoralis. D. 45–48. Günther, *l. c.*

Xiphorhamphus falcirostris (Cuv.).—A. 22–27. Günther, *l. c.*

Distichodus mossambicus and *schenga* are described by Peters, Mossamb. Flussfische, pp. 71 & 74, taf. 13. figs. 1 & 2.

Myletes duriventris (Cuv.).—D. 15–16. A. 33–34. Abdominal spines 39–48. Günther, *l. c.* p. 247.

Heteropygii.

Typhlichthys subterraneus (Girard) proves to be identical with *Amblyopsis*. Günther, Fish. vii. p. 2.

Cyprinodontidæ.

Characodon lateralis figured by Günther, Trans. Zool. Soc. vi. p. 480, pl. 82. fig. 2.

Trifarcius felicianus, sp. n., Poey, Repert. Fis.-nat. Cuba, ii. p. 412, Cuba. —*Trifarcius* is said to be most closely allied to *Cyprinodon*.

Haplochilus dovii figured by Günther, *l. c.* pl. 82. fig. 5.

Haplochilus infrafasciatus (Gthr.) is, according to Peters, =*Pœcilia sexfasciata* (Ptrs.), and generically distinguished from *Haplochilus* by the presence of pseudobranchiæ : *Lycocyprinus*, Peters, Monatsber. Ak. Wiss. Berlin, 1868, p. 146.

Haplochilus playfairii. Prof. E. P. Wright relates his adventures in an experiment of bringing this fish alive to Europe. Ann. & Mag. Nat. Hist. 1868, ii. pp. 438–441.

Fundulus. Dr. Günther, *l. c.*, describes and figures the Central-American species, viz. :—*F. labialis*, pl. 84. figs. 1 & 2; *F. punctatus*, pl. 84. fig. 5; *F. guatemalensis*, pl. 84. figs. 3 & 4; *F. pachycephalus*, pl. 84. fig. 6.

Fundulus orthonotus. Prof. Peters proposes for this fish a new genus, *Nothobranchius*, on account of the presence of minute pseudobranchiæ, and the absence of posterior processes of the intermaxillaries. The fish is figured Mossamb. Flussfisch. p. 60, taf. 12. fig. 1; also in Monatsber. Ak. Wiss. Berlin, 1868, p. 145.

Rivulus ocellatus, sp. n., Hensel, Wiegm. Arch. 1868, p. 365, Rio de Janeiro.

Gambusia nicaraguensis figured by Günther, *l. c.* pl. 82. fig. 3.

Gambusia picturada, sp. n., Poey, *l. c.* p. 410, Cuba.

Pœcilia unimaculata (?) described by Hensel, Wiegm. Arch. 1868, p. 358.

Pœcilia elongata and *P. petenensis* figured by Günther, *l. c.* pl. 85. figs. 2 and 3 & 4.

Mollienesia petenensis. Dr. Günther figures male, young, and female, *l. c.* pl. 86. figs. 1–3.

Xiphophorus hellerii. The sexes and some varieties figured by Dr. Günther, *l. c.* pl. 87. figs. 2–6.

Girardinus pleurospilus figured by Günther, *l. c.* pl. 87. fig. 1.

Girardinus januarius and *Girardinus caudimaculatus*, spp. nn., Hensel, Wiegm. Arch. 1868, pp. 360, 362, from Southern Brazil.

Scombresocidæ.

Hemirhamphus. Prof. Poey makes remarks on the Cuban species of this genus, and describes *Euleptorhamphus velox* as new, *l. c.* p. 383.

Prof. Peters describes as a new species *Hemirhamphus* (*Zenarchopterus*) *philippinus*, and makes remarks on his *H. viviparus*. Monatsber. Ak. Wiss. Berlin, 1868, p. 273.

Belone. Prof. Poey draws attention to discrepancies between specimens

observed by him and descriptions in the 'Catalogue of Fishes;' they refer to the following species:—*B. maculata, crassa, latimana, notata,* and *depressa. L. c.* pp. 165–167; see also pp. 381, 382. [The Recorder will have to refer to these observations on another occasion.]

Belone acus=B. vulgaris, according to Steindachner, Sitzgsber. Ak. Wiss. Wien, 1868, lvii. p. 732.

Exocœtus. Prof. Poey makes remarks on the Cuban species of this genus, and describes *Exocœtus parræ* as new, *l. c.* p. 385.

Exocœtus callopterus figured by Günther, Trans. Zool. Soc. vi. p. 479, pl. 83.

Exocœtus melanopus, sp. n., Günther, Ann. & Mag. Nat. Hist. 1868, i. p. 459, from Zanzibar.

Salmonidæ.

Salmo. Dr. Murie has described and figured some dwarfed examples of a Salmonoid, hatched from ova which were obtained from pisciculturists, and said to be Rhine-Salmon. The fish were kept in a freshwater-tank for four or five years, and the author is inclined to regard them as examples of the Salmon the development of which was arrested by the outward change of physical conditions. Proc. Zool. Soc. 1868, pp. 247–254, pl. 23. Dr. Günther states that the examples were undeveloped individuals of some Lake-Trout or hybrids, but certainly not *Salmo salar.* Ibid. p. 214.

Salmo salar. An enlarged figure of an individual one day old is given by Dr. M'Intosh. Journ. Micros. Sc. viii. pl. 3.

Salmo umbla. Prof. v. Siebold reports on an attempt at transporting eggs from Bavarian lakes to New Zealand. Sitzgsber. Bayr. Ak. Wiss. 1868, Feb. 1, pp. 300–307. [According to later news this attempt proved to be a failure.]

Thaleichthys pacificus. Mr. R. Brown has published observations on the capture of the Oulachan, and on the process of manufacture of the oil, which he regards as superior to Codliver-oil with regard to its medicinal application. Pharmaceut. Journal, 1868, June.

Galaxidæ.

Galaxias schomburgkii, sp. n., Peters, Monatsber. Ak. Wiss. Berlin, 1868, p. 455, Adelaide.

Mormyridæ.

Prof. Peters (Mossamb. Flussfische) describes *Mormyrus discorhynchus,* p. 75, taf. 14, *M. macrolepidotus,* p. 79, taf. 15. fig. 1, *M. longirostris,* p. 83, taf. 16. fig. 2, *M. mucupe,* p. 87, taf. 16. fig. 1, and *Mormyrops zambanenje,* p. 88, taf. 15. fig. 2.—The author corrects an error of the Recorder, who has described *Mormyrops* as lacking teeth on the palate and tongue, p. 89.

Gonorhynchidæ.

This family has been established for *Gonorhynchus* by Dr. Günther, Fish. vii. p. 373.

Hyodontidæ.

This family has been established for *Hyodon* by Dr. Günther, Fish. vii. p. 375.

Osteoglossidæ.

This family has been established by Dr. Günther, Fish. vii. p. 377, for *Osteoglossum*, *Arapaima*, and *Heterotis*.

Clupeidæ.

Dr. Günther has proposed the following arrangement of the fishes of this family (Fish. vii. p. 381) :—

First Group. Engraulina.

1. *Cetengraulis* (g. n., p. 383) with 3 species, *C. edentulus* (Cuv.) being the type.
2. *Engraulis* (C. & V.) with 39 species, three of which are new, viz. *E. brevirostris*, Bahia (p. 392), *E. polynemoides*, Madagascar (p. 394), and *E. batesii*, Para (p. 399).
3. *Coilia* (Gray) with 12 species: *Coilia quadrifilis*, sp. n., from the Malayan peninsula (p. 403).

Second Group. Chatoëssina.

4. *Chatoëssus* (C. & V.) with 15 species, two being new, viz. *Ch. erebi*, Australia (p. 407), and *Ch. mexicanus*, Central America (p. 409).

Third Group. Clupeina.

5. *Clupea* (Cuv.) with 90 species, the following being new:—*Cl. atricauda*, Ceram and Amboyna (p. 426), *Cl. notacanthus*, Chile (p. 443).
6. *Clupeoides* (Blkr.) with 4 species.
7. *Pellonula* (g. n.) *vorax* (sp. n., p. 452), from West Africa.
8. *Clupeichthys* (Blkr.) with 1 species.
9. *Pellona* (C. & V.) with 19 species.
10. *Pristigaster* (Cuv.) with 8 species.
11. *Chirocentrodon* (g. n.) *tæniatus* (sp. n., p. 463), West Indies.

Fourth Group. Dussumieriina.

12. *Spratelloides* (Blkr.) with 4 species.
13. *Dussumieria* (C. & V.) with 2 species.
14. *Etrumeus* (Blkr.) with 2 species.

Fifth Group. Albulina.

15. *Albula* (Gronov.) with 1 species.

Sixth Group. Elopina.

16. *Elops* (L.) with 2 species.
17. *Megalops* (Commers.) with 2 species.

Seventh Group. Chanina.

18. *Chanos* (Lacép.) with 2 species.

Prof. Poey gives a synopsis of the Cuban species of this family in Repert. Fis.-nat. Cuba, ii. pp. 418–422.

√ *Engraulis cubanus* is described as a new species by Poey, *l. c.* p. 420.

√ *Clupea harengus*. Axel Boeck describes the various kinds of food of the

Herring, Tidsskr. for Fiskeri Kjöbnh. i. p. 154, or Wiegm. Arch. 1868, p. 72. He says that the so-called "migrations" of the herring have two causes: in the spring the fishes approach the coasts to spawn; they do not feed then. In the summer and autumn they wander in search of food.

Clupea alosa and *finta* are not specifically distinct, according to Steindachner, Sitzgsber. Ak. Wiss. Wien, 1868, lvii. p. 737.

Pellona bleekeriana, sp. n., Poey, *l. c.* p. 242, Cuba.

Chanos salmoneus. A specimen from Mossambique is figured by Peters, Moss. Flussfische, taf. 20. fig. 1, as *Ch. mossambicus*.

Alepocephalidæ.

This family has been established by Dr. Günther, Fish. vii. p. 477, for *Alepocephalus* (Risso).

Notopteridæ.

Dr. Günther (Fish. vii. p. 479) divides *Notopterus* into two subgenera:—a. *Notopterus* with the three species known and *N. afer*, sp. n., from West Africa (p. 480), and b. *Xenomystus* with *N. nigri*, sp. n., from the River Niger (p. 481).

Halosauridæ.

This family has been established by Dr. Günther, Fish. vii. p. 482, for *Halosaurus* (Johnson).

Gymnotidæ.

Dr. Steindachner has described the species in the Vienna collection, Sitzgsber. Ak. Wiss. Wien, 1868, lviii. pp. 249–264, viz.:—four *Sternarchus*, *St. nattereri* (p. 251, taf. 2. fig. 1), *St. schotti* (p. 252, taf. 1. figs. 1 & 2), and *St. mormyrus* (p. 253, taf. 1. fig. 3) being new; three *Rhamphichthys*, *Rh. brevirostris* (p. 254, taf. 2. fig. 2) being described as new; four *Sternopygus*, one *Carapus*, and one *Gymnotus*.

Muræniдæ.

Prof. Peters controverts the views of Carus & Gill, that certain forms of *Leptocephalus* are young *Cepola* or *Conger*. Monatsber. Ak. Wiss. Berlin, 1868, pp. 130, 131.

Prof. Poey has published a monograph of the Eels of Cuba, Repert. Fis.-nat. Cuba, ii. pp. 245–268 (see also pp. 424–428); it is illustrated by two plates with outline figures of the heads of some of the species. He has adopted Bleeker's systematic arrangement, and distinguishes 27 species. Having lately examined a good number of West-Indian species, which were carefully compared with Prof. Poey's descriptions, the Recorder may be allowed to add, in brackets, the determinations given by him:—

1. *Anguilla cubana* (Kaup) [=*A. bostoniensis*].
2. *Conger esculentus* (Poey) [most probably=*C. vulgaris*].
3. *Ophisoma analis* (Poey) [perhaps a distinct species].

4. *Ophisoma impressus* (Poey) [= *Congromuræna balearica*].
5. *Echelus caudilimbatus* (sp. n., p. 249) [is evidently not an *Echelus*= *Myrus*].
6. *Myrophis microstigmius* (sp. n., p. 250) [an= *Myrophis punctatus*?].
7. *Macrodonophis mordax* (g. & sp. n., p. 252) [= *Ophichthys punctifer*, Kaup].
8. *Ophisurus latemaculatus* (sp. n., p. 252) [= *Ophichthys pardalis*, Val.].
9. *Ophisurus longus* (sp. n., p. 254) [= *Ophichthys acuminatus*, Gronov.].
10. *Ophichthys chrysops* (Poey) [probably = *Ophichthys gomesii*, Casteln.].
11. *Ophichthys pauciporus*, sp. n., p. 255.
11 *a*. *Ophichthys brachyurus*, sp. n., p. 426 [is a doubtful species].
12. *Ophichthys macrurus* (sp. n., p. 256) [= *Ophichthys parilis*, Richards.].
13. *Uranichthys* (g. n.) *havanensis* (Bl. Schn.) [= *Ophichthys havanensis*].
14. *Uranichthys brachycephalus* (sp. n., p. 257) [*O. havanensis*].
15. *Gymnothorax infernalis* (Poey) [*Muræna afra*, Bl.].
16. *Gymnothorax erebus* (Poey) [is a doubtful species].
17. *Gymnothorax rostratus* (Agass.) [= *Muræna moringa*, Cuv.]
18. *Gymnothorax conspersus*, sp. n., p. 259.
19. *Gymnothorax multiocellata* (Poey) [is a doubtful species].
20. *Gymnothorax scriptus* (sp. n., p. 261) [= *Muræna miliaris*, Kaup].
21. *Gymnothorax elaboratus* (Poey) [perhaps = *Muræna flavopicta*, Kaup].
22. *Priodonophis ocellata*, Agassiz.
23. *Priodonophis meleagris* (Quoy & Gaim., not Shaw) [= *Muræna ocellata*, Agass.]
24. *Echidna fuscomaculata* (sp. n., p. 263) [= *Muræna catenata*, Bl.].
25. *Echidna flavofasciata* (sp. n., p. 264) [= *Muræna catenata*, Bl.].
26. *Pythonichthys sanguineus* (g. et sp. n., p. 264) [= *Muræna sanguinea*].
27. *Channomuræna cubensis* (sp. n., p. 266) [= *Channomuræna vittata*, Rich.].

Anguilla. Prof. Peters (Mossamb. Flussfische) describes *A. labiata*, p. 94, taf. 17, *A. mossambica*, p. 98, taf. 18. fig. 1, *A. macrophthalma*, p. 99, taf. 19, and *A. virescens*, p. 101, taf. 18. fig. 2.

Heteroconger, g. n., Bleeker, Versl. & Meded. Ak. Wet. Amsterd. 1868, ii. p. 331; distinguished from the true Eels and Congers by the absence of pectoral fins.—*H. polyzona*, sp. n., p. 332, c. tab., from Amboyna.

Ophichthys crocodilinus is described by Dr. Bleeker under the name of *Brachysomophis horridus*, Versl. & Meded. Ak. Wet. Amsterd. 1868, ii. p. 303.

LOPHOBRANCHII.

Syngnathus. *S. spicifer* (Rüpp.) = *S. gastrotænia* (Blkr.) according to Peters, Monatsber. Ak. Wiss. Berlin, 1868, p. 276.—The same author describes four new species:—*S. fistulatus*, from Puerto Cabello, p. 456, *S. margaritifer*, from Sydney, p. 467, *S. pœcilolæmus*, from South Australia, p. 458, and *S. martensii* from Borneo, p. 460.

Syngnathus elucens, *brachycephalus*, and *tenuis*, spp. nn., Poey, Repert. Fis.-nat. Cuba, ii. pp. 443, 444, from Cuba.

Syngnathus mossambicus is described and figured by Peters, Mossamb. Flussfische, p. 104, taf. 20. fig. 3.

Cœlonotus (*Syngnathus*) *argulus* is described and figured by Peters, *l. c.* p. 106, taf. 20. fig. 4.

Belonichthys [g. n.] (*Syngnathus*) *zambezensis* is described and figured by Peters, *l. c.* p. 108, taf. 20. fig. 5; and Monatsber. Ak. Wiss. Berlin, 1868, p. 147.

Microphis. Prof. Peters states that the egg-pouch is abdominal and not caudal, Monatsber. Ak. Wiss. Berlin, 1868, p. 276. He describes three new species from the Philippine Islands, viz. *M. caudatus*, p. 276, *M. pleurostictus*, p. 278, and *M. jagorii*, p. 280.

Nerophis dumerilii, sp. n., Steindachner, Sitzgsber. Ak. Wiss. Wien, 1868, lvii. p. 1002, Bombay.

Hippocampus camelopardalis (Bianconi) = *H. subcoronatus* (Gthr.) according to Peters, *l. c.* p. 276.

PLECTOGNATHI.

On the Cuban species see Poey, Repert. Fis.-nat. Cuba, ii. pp. 428–442.

Ostracion. Prof. Poey gives a synopsis of the Cuban species, *l. c.* pp. 439–442, and describes *Ostracion undulatus*, sp. n., p. 441.

Ostracion cornutus (L.). On its synonymy, Peters, Monatsber. Ak. Wiss. Berlin, 1868, p. 460.

Diodon hystrix. On its synonymy, Poey, *l. c.* pp. 170, 430.

Tetrodon politus and *T. geometricus* characterized by Günther, Trans. Zool. Soc. vi. p. 489.

Tetrodon ornatus, sp. n., Poey, *l. c.* pp. 244, 433, Cuba.—*Tetrodon lineolatus* and *punctatus*, spp. nn., Poey, *l. c.* p. 432, Cuba.

Monacanthus stratus (Poey) = *M. parraianus* (P.), Poey, *l. c.* p. 171.—A synopsis of all the Cuban species, ibid. pp. 436–438.

Monacanthus hippocrepis (Q. & G.) described by Steindachner, Sitzgsber. Ak. Wiss. Wien, 1868, lvii. p. 1002.

Balistes. *B. piceus* (Poey) = *B. ringens*, Poey, *l. c.* pp. 170, 435; notes on *B. nebulosus* and *B. cicatricosus* and others, ibid. and 434–436.

GANOIDEI.

Acipenser. Prof. Duméril (Nouv. Arch. Mus. d'Hist. Nat. iii. 1867, pp. 131–181) has published a Prodromus of a Monograph of the Sturgeons, which is an abstract of his account in the second volume of his general work of fishes, which appears to be in the press. He gives notes on the general characters, geographical distribution, and other points of their natural history. He adopts six subgenera, viz. *Sterletus*, *Lioniscus*, and *Helops*, which he unites into a group, "Opisthocentres;" and *Huso*, *Acipenser*, and *Antaceus*, forming a group, "Mésocentres." He enumerates the species which he believes he has distinguished, and gives detailed descriptions and figures of fourteen North-American *Antacei*, of which the following are considered to be new:—*A. caryi*, p. 169, pl. 12. fig. 2; *A. ayresii*, p. 171, pl. 12. fig. 1, and pl. 16. fig. 3; *A. hallowellii*, p. 172; *A. cincinnati*, p. 174, pl. 14. fig. 2; *A. buffalo*, p. 175, pl. 14. fig. 1; *A. lecontei*, p. 177, pl. 16. fig. 1; *A. putnami*, p. 178, pl. 13. fig. 1; *A. agassizii*, p. 181, pl. 11. fig. 2; *A. alexandri*, p. 183, pl. 15. fig. 1; *A. oligopeltis*, p. 184, pl. 15. fig. 2.

Lepidosteus manjuari (Poey) = *Esox tristoechus* (Bl.), Poey, Repert. Fis.-nat. Cuba, ii. pp. 171, 445.

ELASMOBRANCHII.

Prof. Poey gives a synopsis of the Cuban species, Repert. Fis.-nat. Cuba, ii. pp. 445–459.

Carcharias (*Prionodon*) *zambezensis* figured by Peters, Mossamb. Flussfisch. taf. 1. fig. 2.

[*Carcharias*] *Ysogomphodon maculipinnis*. Notes by Poey, *l. c.* pp. 245, 419, 450.—Characterized by Günther, Trans. Zool. Soc. vi. p. 490.

Hypoprion signatus, sp. n., Poey, *l. c.* p. 452, Cuba.

Galeocerdo rayneri, sp. n., Macdonald & Barron, Proc. Zool. Soc. 1868, p. 368, pl. 32, from Australia.

Heptranchus indicus. Notes by Macdonald & Barron, *l. c.* p. 371; the fish is figured on pl. 33.

Squalus platyodon (Poey) = *S. obtusus* (P.); *S. tiburo* (P.) = *Priodon falciformis* (Bibr.), Poey, *l. c.* pp. 172, 449.

Spinax niger, a British fish, Gray, Ann. & Mag. Nat. Hist. 1868, i. p. 312.

Centroscymnus cœlolepis is caught at great depths, the lines being 600 fathoms long. E. P. Wright, Ann. & Mag. Nat. Hist. 1868, ii. p. 426.

Rhinobatus leucorhynchus, sp. n., Günther, *l. c.* p. 490, Panama.

Aëtobatis latirostris found at Panama, Günther, *l. c.* p. 491.

CYCLOSTOMATA.

Petromyzon macrostomus, sp. n., Burmeister, Anal. Mus. Buen. Ayres, 1868, Act. Soc. Paleont. p. xxxvi, from Buenos Ayres.

ARACHNIDA

BY

W. S. Dallas, F.L.S., &c.

I. *Work in progress.*

Thorell, T. Kongliga Svenska Fregatten Eugenies Resa omkring Jorden. Zoologi: Arachnider, i. pp. 1–34: 1868.

Contains descriptions of new or little-known species of Epeïridæ. Three new genera are characterized.

II. *Papers published in Journals, &c.*

Blackwall, John. Notice of several Species of Spiders supposed to be new or little known to Arachnologists. Ann. & Mag. Nat. Hist. 4th series, vol. ii. pp. 403–410.

Canestrini, Giovanni. Nuovi Aracnidi Italiani. Annuario della Soc. dei Naturalisti in Modena, Anno iii. pp. 190–206: 1868.

Claparède, E. Studien an Acariden. Zeitschr. für wiss. Zoologie, Band xviii. pp. 445–546, plates 30–40.

An elaborate memoir on the structure, physiology, and development of the Acarina, illustrated by particular reference to the following forms:—*Atax, Haplophora, Hypopus, Myobia, Tiroglyphus, Rhizoglyphus, Myocoptes, Listrophorus,* and *Tetranychus.*

Emerton, J. H. The habits of Spiders. American Naturalist, vol. ii. pp. 476–481, plate 11.

Erber, Josef. Bericht über eine Reise nach Rhodus. Verhandl. zool.-bot. Gesellsch. in Wien, Band xviii. pp. 903–908.

Herman, C. Otto. Ueber das Sexualorgan der *Epeïra quadrata,* Walck. Verhandl. zool.-bot. Gesellsch. in Wien, Band xviii. p. 923–930.

A detailed description of the external sexual organs in both sexes of *Epeïra quadrata.*

Joseph, Gustav. *Cyphophthalmus duricorius,* eine neue Arach-

niden-Gattung aus einer neuen Familie der Arthrogastren-Ordnung, entdeckt in der Luëger Grotte in Krain. Berliner entom. Zeitschr. 1868, p. 241–250, pl. 1. figs. 1–12.

Joseph, Gustav. Nachtrag zur Beschreibung von *Cyphophthalmus duricorius*. Ibid. pp. 269–272, pl. 1. figs. 13–17.

Menge, A. Preussische Spinnen. II. Abtheilung. Schriften der naturforschenden Gesellschaft in Danzig. Neue Folge, Band ii. 66 pp. (153–218) and 15 plates (29–43).
Contains only descriptions of *Theridiidæ*.

Robin, C. Mémoire sur les Sarcoptides avicoles, et sur les métamorphoses des Acariens. Comptes Rendus, tome lxvi. pp. 776–786; abstract in Annals & Mag. Nat. Hist. 4th ser. ii. pp. 78, 79.

Schiner, J. R. Miscellen. Verhandl. zool.-bot. Gesellsch. in Wien, Band xviii. pp. 916–922.
This portion of Schiner's paper is devoted to Spiders, and especially to the investigation of their spinning.

Simon, Eugène. Monographie des espèces Européennes de la famille des Attides (*Attidæ*, Sundevall, *Saltigradæ*, Latreille). Annales Soc. Ent. France, 4e série, tom. viii. pp. 11–72 and 529–726, plates 5–7.

——. Sur quelques Aranéides du midi de la France. Rev. et Mag. de Zool. 1868, pp. 449–456.
Contains notices and descriptions of some Spiders detected in the South of France, three of which are described as new.

Boisduval (Entomologie horticole, pp. 65–96) gives a general account of the structure and habits of the animals of this class, and a more detailed description of the Acarina, with especial reference to the species which are injurious to horticulture. Of the Araneida he describes only *Epeïra diadema* and *Theridion benignum*.

ARANEIDA.

Schiner (Verh. zool.-bot. Ges. in Wien, xviii. pp. 916 922) records some observations on the spinning of Spiders. He observed the formation by an *Epeïra* of a sort of band of silk threads, which were then carried out and elongated by aërial currents, and gave rise to an infinite quantity of small floating threads. These adhered to neighbouring objects, and the Spider then made use of them to escape. The Spider could evidently select the threads which led to a desirable resting-place *. Schiner remarked that after a time the quantity of fine fila-

* Schiner does not appear to have been acquainted with the observations of Terby and Ausserer on the same subject. See 'Record,' 1867, p. 184.

ments produced became very great, and he suggests that gossamer consists merely of accumulations of useless threads. He thinks that the statement that the male Spider approaches the female cautiously, for fear of being devoured, is erroneous, and mentions his having observed three nets (one large one with a small one on each side of it) stretched upon the same system of threads in a web of *Epeïra patagiata*.

J. H. Emerton publishes (Amer. Natural. ii. p. 476–481) a general popular account of the habits of Spiders, chiefly relating to the Epeïridæ. On plate 11. fig. 1 he figures the geometric web of one of these species, and gives outline figures of *Epeïra vulgaris* (Hentz) and the details of its structure (figs. 2–8).

Pryer (Journ. N. China Branch Roy. Asiatic Soc. n. s. iv. p. 76) notices several species of Spiders which are common at Shanghai. Among them is a large species marked with red, gold, silver, and black, which makes a web strong enough to catch even the largest Beetles, and sometimes to support a cap thrown into it.

Lucas notices the Spiders of the neighbourhood of Roscoff, Finisterre. Bull. Soc. Ent. Fr. 1868, pp. xciii, xciv.

Scytodidæ.

Scytodes unicolor, Canestrini, Ann. Soc. Nat. Modena, iii. p. 202, Tuscany.

Mygalidæ.

Cteniza ariana (Walck.). Erber notices the habits of this Spider as observed by him in the island of Tinos (Verh. zool.-bot. Ges. in Wien, xviii. pp. 905, 906). At night these Spiders come out of their nests, fasten the open trapdoor to neighbouring objects, and spin a net about six inches long by scarcely half an inch in height. Erber saw a *Pimelia* and a *Cephalostenus* caught in two of these nets; the Spiders sucked out their fluids and then removed the empty skin several feet from their burrows. In the morning the nets were removed, and Erber believes the net of each night is added to the trapdoor. He found the eggs at the bottom of the tubes, attached singly to threads to the number of about sixty. The young seem to form dwellings for themselves very early.

Mygale bicolor. Lucas publishes a note on this species, which attains a length of 85 millim. (Bull. Soc. Ent. Fr. 1868, pp. xix, xx).

Lycosidæ.

Lucas notices the occurrence of *Herselia oraniensis* in Spain, and indicates a species from Madagascar, which he proposes to name *H. vinsonii*, but does not describe. Bull. Soc. Ent. Fr. 1868, p. xli.

Salticidæ.

E. Simon has published (Ann. Soc. Ent. France, 4e série, viii. pp. 11–72 and 529–726) a monograph of the European species

of this family. He divides the European forms into the following genera:—

I. Chelicera short and vertical in both sexes.
  A. Head square, or broader than long.
    1. Digital enveloped above by the tarsus of the palpus.
      a. Palpus short, robust, with a broad tarsus.
        * Femur of the palpus unarmed and normal.
          a. Tarsus of the palpus widened into a palette. 1. Marpissus (Koch).
          β. Tarsus normal ..... 2. Attus (Walck.).
          γ. Tarsus raised into a crest.. 3. Yllenus, g. n.
        † Femur unarmed and clavate.. 7. Menemerus, g. n.
        ‡ Femur armed with a tooth .. 8. Heliophanus (Koch).
      b. Palpus slender, very long; tarsus narrower than the tibia. 5. Plexippus (Koch).
    2. Digital exposed beneath the tibia 4. Dendryphantes (Koch).
  B. Head narrow, longer than broad .. 9. Salticus (Lat.).
II. Chelicera long and horizontal in the ♂.
  A. Head not separated from the thorax; sternum broad. 6. Calliethera (Koch).
  B. Head separated from the thorax by a constriction; sternum narrow and long ..... 10. Pyrophorus* (Koch).

It will be noticed that this classification differs considerably from that adopted by the author in his 'Histoire Naturelle des Araignées;" his proposed genus *Cyrtonotus* is abolished, and several of Koch's genera, which he formerly regarded as subordinate groups, are here restored to generic rank.

Simon describes the following known species of this family, generally with illustrations of details:—Marpissus *muscosus* (Cl.)=*rumphii* (Scop.)=*tardigradus* (Walck.)=*striatus* (Sund.), p. 17, pl. 5. figs. 2 & 3; *M. pomatius* (Walck.), p. 19, pl. 5. fig. 1; *M. hamatus* (C. Koch), p. 20; (*Attus radiatus*, Grube, belongs to one of the last two species;) *M. tæniatus* (L. Koch), p. 22; Attus *sanguinolentus* (Linn.)=*sloani* (Scop.), p. 26, pl. 5. figs. 4–6; *A. hæmorrhoicus* (C. Koch), p. 27; *A. bicolor* (Walck.)=*rubiginosus* (Simon), p. 28; *A. arcuatus* (Cl.)=*marcgravii* (Scop.)=*gœzenii* (Schr.)=*grossipes* (Walck.), p. 35, pl. 5. figs. 9, 10; *A. floricola* (C. Koch) =*rupicola* (Koch), p. 39, pl. 5. fig. 11; *A. saxicola* (C. Koch), p. 42; *A. crucigerus* (Walck.)=*crucifer* (Sund.)=*crux* (Hahn), p. 44, pl. 5. fig. 12; *A. arcigerus* (Walck.), p. 47; *A. falcatus* (Cl.)=*flammatus* (Cl.) =*blancardi* (Scop.)=*abietis* (Hahn)=*coronatus* (Walck.), p. 54, pl. 5. figs. 13, 14; *A. lætabundus* (C. Koch), p. 56; *A. farinosus* (C. Koch), p. 59; *A. mitratus* (L. Koch), p. 60; *A. insignitus* (Cl.)=5-*notatus* (Cl.)=*quinquepartitus* (Walck.)=*navaria* (List.)=*V-insignitus* (Westr.), p. 64; *A. monardi* (Luc.)=*nicoleti* (Luc.), p. 66, pl. 5. fig. 17; *A. litteratus* (Walck.)=*festiva* and *striatus* (C. Koch), pp. 68 & 532, pl. 5. fig. 18; *A. capreolus* (L. Koch), p. 69, pl. 5. fig. 16; *A. affinis* (Luc.), p. 71; *A. luctuosus* (Luc.), p. 529; *A. papillonaceus* (sic) (L. Koch), p. 535; *A. agilis* (Hahn), p. 539; *A. pubescens*

* Changed to *Pyroderes* (Simon), p. 714.

(Fab.)=*pugnax* (Rossi), p. 543; *A. pratincola* (C. Koch), p. 544, pl. 5. fig. 20; *A. terebratus* (Cl.)=*psyllus* (Walck.), p. 545, pl. 5. fig. 22; *A. algerinus* (Luc.)=*armiger* and *leporinus* (L. Koch), p. 547, pl. 5. fig. 21; *A. fasciatus* (Hahn)=*aprica* (C. Koch), p. 552, pl. 6. fig. 1; *A. lineatus* (C. Koch), p. 555; *A. lippiens* (L. Koch), p. 558; *A. bresnieri* (Luc.), p. 559, pl. 6. fig. 2; *A. pulchellus* (Hahn)=*maculatus* (Walck.), p. 565; *A. striatus* (Cl.) =*notabilis* (C. Koch)=*boryi* (Luc.), p. 566, pl. 6. fig. 3; *A. nebulosus* (C. Koch), p. 572; *A. hastatus* (Cl.)=*muscosus* (Sund.)=*lunulatus* (Walck.), p. 576, pl. 6. fig. 5; *A. medius* (C. Koch)=*rudis* (Sund.), p. 578; *A. xanthomelas* (C. Koch), p. 581; *A. encarpatus* (Walck.), p. 583; *A. bimaculatus* (C. Koch), p. 585; *A. canescens* (C. Koch), p. 586; *A. erraticus* (Walck.)=*callidus* (Walck.)=*tigrina* (Koch)=*distinctus* (Blackw.), p. 588; *A. sulphureus* (L. Koch), p. 596; *A. frontalis* (Walck.)=*maculatus* (Wid.)=*promptus* (Blackw.), p. 597; *A. paykullii* (Sav.), p. 601; *A. reticulatus* (Blackw.), p. 604; *A. eoeco-eiliatus* (Camb.), p. 609; *A. saltator* (Camb.)=*floricola* (Blackw.), p. 611; *A. albifrons* (Luc.), p. 618; *A. morcletii* (Luc.), p. 622; *A. regillus* (L. Koch), p. 622; *A. heterophthalmus* (Wid.)=*chalybæus* and *depressus* (Walck.)=*obscurus* (Blackw.), p. 624; *A. brevipes* (Hahn)=*annulipes* (Walck.)=*suturalis* (C. Koch), p. 626; DENDRYPHANTES *bilineatus* (Walck.), p. 635, pl. 6. fig. 13; *D. lanipes* (C. Koch), p. 636; *D. dorsatus* (C. Koch)=*leucomelas* (C. Koch), p. 638; *D. gesticulator* (Luc.), p. 640; *D. fulviventris* (Luc.), p. 641; *D. grossus* (C. Koch), p. 642; PLEXIPPUS *adansonii* (Sav.)=*oraniensis* (Luc.), p. 644, pl. 6. fig. 12, pl. 7. fig. 3; CALLIETHERUS *scenicus* (Cl.)=*cingulata* (Panz.)=*lineolatus* (Sund.)=*cordicalis* (Hahn), p. 647, pl. 6. fig. 15; *C. olivaceus* (L. Koch), p. 649; *C. histrionicus* (C. Koch), p. 650, pl. 6. fig. 14; *C. zebraneus* (C. Koch), p. 652; *C. tenerus* (C. Koch), p. 654; *C. confusus* (Luc.), p. 656; HELIOPHANUS *cupreus* (Walck.)=*atro-virens* (Sund.), p. 669; *H. dubius* (C. Koch), *H. truncorum* (Linn.)=*muscorum* (Walck.)=*æneus* (Hahn)=*chalybæus* (Hahn), and *H. flavipes* (Hahn), p. 681; *H. equester* (L. Koch), p. 689; *H. melinus* (L. Koch), p. 696; *H. albosignatus* (L. Koch), p. 702; *H. nitens* (C. Koch), p. 704; *H. nitidus* (Luc.), p. 705; *H. tricinctus* (C. Koch), p. 705; *H. auratus* (C. Koch), p. 707; SALTICUS *formicæformis* (Luc.)=*formicarius* (C. Koch), p. 708, pl. 7. fig. 14; *S. venator* (Luc.)=*hilarulus* (C. Koch), p. 711; *S. mutilloides* (Luc.), p. 713; PYRODERES* *formicarius* (De G.)=*formicoides* (Walck.)=*seminfus* (C. Koch), p. 715, pl. 7. figs. 16–18.

SIMON also notices the following as species unknown to him:—*Marpissus blackwallii* (Clark), *M. strigipes* (Westr.), *Attus setigerus* (Dolesch.), *A. fuscus* (Walck.), *A. mannii* (Dolesch.), *A. quinquefoveolatus* (Dolesch.), *A. atellanus* (C. Koch), *A. trilineatus* (W. Rossi), *A. linearis* (W. Rossi), *A. striolatus* (C. Koch), *A. mucidus*, *petrensis*, and *paludicola* (C. Koch), *A. notatus* and *jenynsii* (Blackw.), *A. rosenhaurii* (L. Koch), *A. striatus* (Luc.), *A. viridimanus* and *biimpressus* (Dolesch.), *A. leucomelas* (W. Rossi), *A. cinereus* and *caricis* (Westr.), *Dendryphantes jugatus* (L. Koch), *Salticus berolinensis* (C. Koch), *S. myrmecinus* and *mermecoides* (W. Rossi), *S. dalmaticus* (Keys.), *Pyrophorus tyrolensis*, *helveticus*, and *siciliensis* (C. Koch), and *P. austriacus* (Dolesch.).

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* =*Pyrophorus* (C. Koch), the name changed on account of *Pyrophorus* (Ill.).

Lucas notices a *Plexippus* from New Caledonia, remarkable for the great length of its chelicera. Bull. Soc. Ent. Fr. 1868, p. xli.

New genera and species:—

Yllenus, g. n., Simon, *l. c.* p. 632. (See Table, p. 176.) Sp. *Y. arenarius* (Menge), Simon, *l. c.* p. 633, pl. 6. fig. 11, Poland, Prussia, Transylvania.

Menemerus, g. n., Simon, *l. c.* p. 662. (See Table, p. 176). Sp. *Euophrys vigoratus* (C. Koch) = *A. agilis* (Walck.), p. 663, pl. 7. fig. 4; *M. falsificus*, sp. n., Simon, *l. c.* p. 664, pl. 7. fig. 5, Alps; *M. heydenii*, sp. n., Simon, *l. c.* p. 665, Andalusia.

Marpissus badius, Simon, *l. c.* p. 23, Sicily; *M. monachus*, Simon, ibid., near Grenoble.

Attus. Simon (*l. c.*) describes the following as new species of this genus:—*A. varicus*, p. 29, pl. 5. fig. 7, Spain; *A. castaneus*, p. 31, pl. 5. fig. 8, Dalmatia, Corfu; *A. phrygianus*, p. 32, France; *A. nitelinus*, p. 33, Spain; *A. albo-ciliatus*, p. 36, Poland, Lithuania, Carniolia; *A. riciniatus*, p. 37, Switzerland; *A. riparius* (L. Koch, MS.), p. 43, Bavaria; *A. diagonalis* (*A. lippiens* ♀, L. Koch), p. 46, Turkey, Greece; *A. brevis*, p. 48, France, Spain; *A. geniculatus*, p. 49, Sicily, Corfu; *A. cingulatus*, p. 50, Switzerland; *A. lævigatus* (sic), p. 51, Corfu, Syra; *A. ostrinus*, p. 52, Corfu; *A. taczanowskii*, p. 58, Lithuania; *A. nervosus*, p. 59, south of France; *A. imitatus*, p. 62, Dalmatia; *A. alter*, p. 63, pl. 5. fig. 15, Spain; *A. candidus*, p. 70, Andalusia; *A. mustellatus*, p. 530, Andalusia; *A. gilvus*, p. 532, Russia; *A. ogieri*, p. 534, Spain, Greece; *A. latifasciatus*, p. 536, pl. 5. fig. 19, Corfu; *A. ornaticeps*, p. 537, Andalusia; *A. distinguendus*, p. 540, Russia; *A. illibatus*, p. 541, Russia; *A. innotatus*, p. 548, south of France; *A. lemniscus*, p. 549, French Alps; *A. diversipes*, p. 550, Andalusia; *A. rogenhoferi*, p. 551, Austria; *A. cinereo-fasciatus*, p. 554, south of France; *A. fulvaster*, p. 556, Sicily; *A. sierranus*, p. 557, Spain; *A. subfasciatus*, p. 560, Russia; *A. semiglabratus*, p. 561, Spain; *A. barbipes*, p. 563, pl. 6. fig. 9, south of France, Italy; *A. lucasii* (=*erraticus*, Luc.), p. 568, south of Europe; *A. vicinus*, p. 569, Andalusia; *A. ravidus*, p. 571, Lithuania; *A. picaceus*, p. 573, pl. 6. fig. 4, Sicily; *A. crassipes*, p. 574, Spain; *A. bombycius*, p. 577, Poland; *A. sexpunctatus*, p. 579, Poland; *A. nigritarsis*, p. 580, Pyrénées-orientales; *A. parcus*, p. 582, Andalusia, Sicily; *A. semi-ater*, p. 584, Andalusia; *A. difficilis*, p. 590, Corsica, Sicily, Naples, Greece; *A. finitimus*, p. 591, Alps; *A. fucatus*, p. 592, Turkey; *A. gambosus*, p. 593, pl. 6. fig. 7, Spain, Sicily, Corsica, Greece; *A. calvus*, p. 594, Corfu; *A. obsoletus*, p. 595, Corfu; *A. scriptus*, p. 599, pl. 6. fig. 5, Alps, Italy, Spain; *A. luridatus*, p. 600, Italy; *A. rufibarbis*, p. 602, pl. 6. fig. 8, Auvergne, Alps, Tyrol; *A. westringii* (=*lætabundus*, Westr.), p. 605, Alps, Sweden, Poland, Spain; *A. multipunctatus*, p. 606, south of France, Sicily; *A. satagens*, p. 606, south of Italy; *A. triangulifer*, p. 607, Andalusia; *A. miser*, p. 608, Alps; *A. pulex*, p. 613, Portugal; *A. inæqualipes*, p. 614, Tyrol; *A. cerussatus*, p. 615, Sicily, Corfu; *A. subsultans*, p. 616, south of France; *A. membrosus*, p. 617, Alps, Spain, Corsica; *A. wankowiczi*, p. 619, Lithuania; *A. argenteo-lineatus*, p. 620, Andalusia, Turkey; *A. rufipes*, p. 627, pl. 6. fig. 10, Sicily; *A. cænescens*, p. 628, Poland; *A. tantulus*, p. 629, Spain; *A. decipiens*, p. 630, Spain; and *A. segnipes*, p. 631, Dalmatia.

Dendryphantes neglectus, Simon, *l. c.* p. 639, Turkey; *D. nigriceps*, Simon *l. c.* p. 640, Illyria.

Callietherus. Simon (*l. c.*) describes the following as new species of this genus:—*C. major*, p. 651, Spain; *C. dispar*, p. 653, Andalusia; *C. similatus* p. 657, France; *C. conjonctus* (sic), p. 657, North Italy; *C. mandibularis* p. 658, pl. 7. fig. 1, Corfu; *C. scitulus*, p. 659, Sicily; *C. unciger*, p. 660 Tyrol; *C. unicolor*, p. 661, Corfu; *C. infimus*, p. 661, pl. 7. fig. 2, Sicily, Greece, Spain.

Heliophanus. Of this genus Simon (*l. c.*) describes the following as new species:—*H. cuprescens*, p. 671, Spain; *H. globifer*, p. 672, pl. 7. fig. 6, France, Austria, Spain; *H. simplex*, p. 673, Corfu; *H. inornatus*, p. 676, Alps; *H. apiatus*, p. 677, pl. 7. fig. 7, Sicily, Naples; *H. recurvus*, p. 679, pl. 7. fig. 8, Alps; *H. karpinskii*, p. 679, Poland; *H. varians*, p. 682, Poland; *H. branickii*, p. 684, pl. 7. fig. 9, France, Trieste; *H. hecticus*, p. 685, Alps; *H. exultans* (L. Koch, MS.), p. 685, Greece; *H. viridatus*, p. 686, Alps; *H. grammicus*, p. 687, pl. 7. fig. 10, Provence; *H. lineiventris*, p. 688, Spain, Sicily, Italy; *H. uncinatus*, p. 691, pl. 7. fig. 11, Alps; *H. cognatus*, p. 692, Alps; *H. rufithorax*, p. 693, Corsica; *H. tribulosus*, p. 694, south of France; *H. cambridgii*, p. 695, pl. 7. fig. 12, Austria, Corfu; *H. furcillatus*, p. 696, South Italy, Sicily, Corfu; *H. expers* (Camb. MS.), p. 698, England; *H. kochii*, p. 699, pl. 7. fig. 13, Tyrol, South of France; *H. armatus*, p. 700, Pyrenees, Spain; *H. calcarifer*, p. 701, Corfu; *H. cernuus*, p. 701, Andalusia; *H.* ——, sp. n., p. 704, France; *H. lacteus*, p. 706, Greece; *H.* ——, sp. n.; p. 706, Sarepta.

Salticus peresii, Simon, *l. c.* p. 709, Andalusia; *S. todillus*, Simon, *l. c.* p. 712, pl. 7. fig. 15, Sicily, Syria.

Salticus diversus, Blackwall, Ann. & Mag. Nat. Hist. 4th ser. ii. p. 403, Bermuda.

Pyrophorus venetiarum, Canestrini, Ann. Soc. Nat. Modena, iii. p. 203, Venetia.

Thomisidæ.

New species:—

Sparassus fulvus, Simon, Rev. et Mag. Zool. 1868, p. 453, south of France.

Thomisus pallens, Blackwall, Ann. & Mag. Nat. Hist. 4th ser. ii. p. 405, Bermuda; *T. gloveri*, Blackwall, ibid., Hendre House.

Philodromus generalii, Canestrini, Ann. Soc. Nat. Modena, iii. p. 205, Modena.

Drassidæ.

New species:—

Dysdera ninnii, Canestrini, Ann. Soc. Nat. Modena, iii. p. 190, and *D grisea*, Canestrini, *l.* p. 191, North Italy.

Micaria aurata, Canestrini, *l. c.* p. 192, and *M. exilis*, Canestrini, ibid., Modena.

Melanophora kochi, Canestrini, *l. c.* p. 193, and *M. gracilis*, Canestrini, *l. c.* p. 194, North Italy.

Clubiona pulchella, Canestrini, *l. c.* p. 195, near Trient.

Drassus laticeps, Canestrini, *l. c.* p. 202, Modena.

Filistata nana, Simon, Rev. et Mag. Zool. 1868, p. 455, near Vaucluse.

Clotho paivani, Blackwall, Ann. Mag. Nat. Hist. 4th ser. ii. p. 409, Teneriffe.

Agelenidæ.

Amaurobius 12-maculatus, sp. n., Canestrini, Ann. Soc. Nat. Modena, iii. p. 204, Modena.

Theridiidæ.

Menge (Schr. naturf. Gesellsch. in Danzig, Neue Folge, ii.) characterizes and figures the following known genera and species of this family:—Steatoda *saxatilis* (Koch), p. 153, pl. 29. tab. 64; *S. picta* (Walck.), p. 154, pl. 29. tab. 65; *S. varians* (Hahn), p. 157, pl. 29. tab. 66; *S. sisyphia* (Cl.) =*nervosum* (Walck.), p. 161, pl. 30. tab. 69; and *S. pulchella* (Walck.), p. 162, pl. 30. tab. 70; Theridium *lineatum* (Cl.)=*redimita* (Linn.), p. 165, pl. 31. tab. 72; Erigone *longipalpis* (Sund.)=*longimanus* (Walck.), p. 196, pl. 37. tab. 93; *E. dentipalpis* (Wid.), p. 198, pl. 37, tab. 94. The majority of the species ordinarily referred to *Theridium* are placed by the author in new genera.

P. Bonizzi describes the copulation and mode of reproduction of *Pholcus phalangioides* (Annuario della Soc. dei Natural. in Modena, iii. pp. 179–181).

New genera and species*:—

Neottiura, g. n., Menge, *l. c.* p. 162. Cephalothorax oval, head elevated and projecting; abdomen oval or roundish oval; legs very long and thin, first pair three times as long as the body, then 4, 2, 3; falces conical, with short claws; palpi of ♂ long, with a strongly developed club; the terminal part of the stema shows a spatuliform lateral process, the spermatophore is leaf-like and deeply emarginate, the penetrant organ is subulate, and besides these there are a tooth and a hook; the operculum of the ♀ has a triangular horny nail. Sp. *Aranea bimaculata* (Linn.)=*carolinum* (Walck.)=*dorsiger* (Hahn), p. 163, pl. 31. tab. 71.

Crustulina, g. n., Menge, *l. c.* p. 168. Cephalothorax oval, cordate behind, convex, with the head well marked and much elevated; back and sternum crustaceous; abdomen nearly globular, with a horny ring at the base; legs short, 1, 4, 2, 3, stout, knees and tibiæ with fine setæ; falces conical, with short claws; palpi in ♂ long, with a well-developed club; stema with a leaf-like pointed spermatophore, a ribbon-like penetrant organ, geniculate near the end, and terminating in a cylindrical point and a horn-like tooth, with denticulated process at the base; operculum in ♀ horny, with two apertures in the hinder margin leading to the seminal sacs. Sp. *Theridium guttatum* (Wid.), p. 168, pl. 31. tab. 73.

Ceratina†, g. n., Menge, *l. c.* p. 170. Cephalothorax oval, slightly cordate behind, narrower in front, very convex above; abdomen nearly globular, with a horny shield on the back; legs short and stout, 4, 1, 2, 3, rather

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* The characters of Menge's new genera are given at some length, as the work in which they occur is scarcely accessible in many places. The genera are, however, founded to so great an extent upon the minute characters presented by the palpi of the male, that the descriptions are not very easily understood without the aid of figures.

† This name is preoccupied by a genus of Bees.

densely clothed with hairs inserted upon small tubercles; falces conical, with a short claw curved like a pruning-knife, and a lateral groove; joint 4 of palpi in ♂ with a tooth-process, cymbium with a hook-like process at base; penetrant organ long, ribbon-shaped, elongato-acuminate; spermatophore lamellar, and besides these organs a tooth and a hook; in the ♀ there is, above the transverse fissure, a shield-shaped horny plate, with a triangular aperture leading to the vesicular seminal receptacles; the frontal eyes are much smaller than the rest. Sp. *Theridium breve* (Wid.), p. 171, pl. 32. tab. 74; *C. rubella*, sp. n., Menge, *l. c.* p. 172, pl. 32. tab. 75; *C. rotunda*, sp. n., Menge, *l. c.* p. 173, pl. 32. tab. 76; and *C. globosa*, sp. n. Menge, *l. c.* p. 174, pl. 32. tab. 77, Prussia.

Euryopis, g. n., Menge, *l. c.* p. 174. Cephalothorax ovate, somewhat convex above, passing gradually into the slightly elevated head; abdomen ovate; legs short, 4, 1, 2, 3; knees and tibiæ with short setæ, claws strongly dentate; male palpal organs strongly developed; penetrant organ short, conical, hooked at apex; spermatophore broad, strong, emarginate at the end, and running out on one side into a hook; tooth rather long; palpi in ♀ with a strong, sexdentate claw at the apex; female opercular apparatus with a rounded-quadrangular plate, and a rounded-triangular upper operculum, below which are the entrances to the seminal receptacles; falces short, conical, with long curved claws; frontal eyes directed sideways, much larger and further apart than the vertical eyes. Sp. *Micryphantes flavo-maculatus* (Koch), p. 175, pl. 33. tab. 78, and *E. tristis* (Hahn?), p. 176, pl. 33. tab. 79.

Pachydactylus *, g. n., Menge, *l. c.* p. 176. Cephalothorax very convex; falces with a geniculate claw; cymbium in ♂ palpi with a tooth at apex; penetrant organ rather elongate, pointed at apex; spermatophore short and thick, impressed on one side, tooth obtuse; frontal eyes placed in front on the projecting part of the head, more distant from each other than the vertical eyes; spinners with few spinnerets, anterior with one larger and seven finer, middle and posterior with three each. Sp. *P. pronus*, sp. n., Menge, *l. c.* p. 177, pl. 33. tab. 80, Prussia.

Platyopis, g. n., Menge, *l. c.* p. 178. Frontal margin in ♂ nearly as broad as the breast, produced on each side into two triangular, acute points, beneath which are two conical horns. Sp. *Theridium sulcifrons* (Wid.), p. 179, pl. 33. tab. 81.

Gonatium, g. n., Menge, *l. c.* p. 180. Vertical eyes wider apart and larger than the frontal eyes; legs 4, 1, 2, 3, with the first two pairs of tibiæ clavate; palpi of male with knobbed knees, and the fourth joint produced into an elongated impressed process; cymbium with a hook at the base. Sp. *Theridium cheliferum* (Wid.), p. 180, pl. 34. tab. 82, and *Micryph. isabellinus* (Koch), p. 182, pl. 34. tab. 83.

Gongylidium, g. n., Menge, *l. c.* p. 183. Vertical eyes wider apart and larger than frontal eyes, the latter looking laterally forwards and upwards; falces in ♂ with a small conical process on the inside below the apex; palpi in ♂ with a knob-shaped knee and a cup-shaped tibial joint, which has an incurved hook on the inside; spermatophore leaf-like, with small filaments on the back; penetrant organ short, curved, tooth strong and horny. Sp. *G. nigricans*, sp. n., Menge, *l. c.* p. 183, pl. 34. tab. 84, Prussia.

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* Preoccupied for a genus of Lizards.

Tmeticus, g. n., Menge, *l. c.* p. 184. Vertical eyes further apart and larger than the frontal eyes; falces with the furrow for the claw toothed on both sides, claws with a furrow-like depression beneath; palpi in ♂ of nearly equal thickness throughout, cylindrical; knee-joint long, with a tooth-like process at the apex; cymbium small, with a hook at the base; stema roundish, with a fringed leaf-like spermatophore and a short triangular penetrant organ subulate at apex; ♀ with two spherical seminal sacs, and rather small, round subsidiary sacs. Sp. *Theridium dentatum* (Wid.), p. 187, pl. 35. tab. 87; *Linyphia graminicola* (Sund.) = *T. rubripes* (Hahn), p. 191, pl. 36. tab. 90; *T. leptocaulis*, sp. n., Menge, *l. c.* p. 185, pl. 35. tab. 85; *T. foveolatus*, sp. n., Menge, *l. c.* p. 186, pl. 35. tab. 86; *T. cristatus*, sp. n., Menge, *l. c.* p. 189, pl. 36. tab. 88; *T. spinipalpis*, sp. n., Menge, *l. c.* p. 190, pl. 36. tab. 89; and *T. hamipalpis*, sp. n., Menge, *l. c.* p. 192, pl. 38. tab. 95, Prussia.

Lophocarenum, g. n., Menge, *l. c.* p. 198. Head elevated, with a vertical eye-tubercle in the ♂; vertical eyes larger and wider apart than the frontal eyes; joint 4 of ♂ palpi boat-like, with dentiform or spinous processes; spermatophore leaf-like; penetrant organ filiform, spiral. Sp. *Theridium acuminatum* (Wid.), p. 201, pl. 39. tab. 98; *Eriyone erythropus* (Westr.), p. 203, pl. 40. tab. 100; *E. scabricula* (Westr.), p. 205, pl. 40. tab. 102; *T. elongatum* (Wid.) = *Micryph. inæqualis* (Koch), p. 209, pl. 41. tab. 106. Sp. n. *L. stramineum*, Menge, *l. c.* p. 199, pl. 38. tab. 96; *L. bihamatum*, Menge, *l. c.* p. 200, pl. 39. tab. 97; *L. parvulum*, Menge, *l. c.* p. 202, pl. 39. tab. 99; *L. apiculatum*, Menge, *l. c.* p. 204, pl. 40. tab. 101, and pl. 41. tab. 107 (? = *T. pusillum*, Wid.); *L. dicholophum*, Menge, *l. c.* p. 206, pl. 40. tab. 103; *L. globiceps*, Menge, *l. c.* p. 207, pl. 40. tab. 104; and *L. crassipalpum*, Menge, *l. c.* p. 208, pl. 41. tab. 105: all from Prussia.

Lophomma, g. n., Menge, *l. c.* p. 209. Head much elevated, bearing all the eyes, or forming two tubercles, the anterior bearing the frontal, and the posterior the vertical eyes; joint 4 of palpi in ♂ cup-shaped at base, with one or two processes at apex; claws strongly dentate. Sp. *Theridium bicorne* (Wid.) = *Micryph. cæspitum* (Koch), p. 212, pl. 42. tab. 111; *T. anticum* (Wid.) = *M. tibialis* (Koch), p. 213, pl. 42. tab. 112; *M. cucullatus* (Koch), p. 215, pl. 32. tab. 114; *Eriyone capito* (Westr.), p. 217, pl. 43. tab. 116. Sp. n. *L. stictocephalum*, Menge, *l. c.* p. 210, pl. 41. tab. 108; *L. psilocephalum*, Menge, *l. c.* p. 211, pl. 41. tab. 109; *L. cristatum*, Menge, *l. c.* p. 211, pl. 48. tab. 110; *L. flavidum*, Menge, *l. c.* p. 215, pl. 42. tab. 113; and *L. mitratum*, Menge, *l. c.* p. 216, pl. 42. tab. 115; all from Prussia.

Phalops, g. n., Menge, *l. c.* p. 218. Head with a conical, horn-like, or furcate elevation, bearing a part or the whole of the eyes, or standing before or behind them. Sp. *Theridion cornutum* (Wid.) = *Micryph. camelinus* (Koch), p. 218, pl. 43. tab. 117; *Eriyone conica* (Westr.), pl. 43. tab. 118; *Eriyone gibbicollis* (Westr.), pl. 43. tab. 119; and *Phalops furcillatus*, sp. n., Menge, pl. 43. tab. 120, Prussia.

Steatoda undulata, Menge, *l. c.* p. 158, pl. 30. tab. 67, and *S. punctulata*, Menge, *l. c.* p. 160, pl. 30. tab. 68, Prussia.

Enyo italica, Canestrini, Ann. Soc. Nat. Modena, iii. p. 196, North Italy.

Linyphiidæ.

Formicina, g. n., Canestrini, Ann. Soc. Nat. Modena, iii. p. 197. Allied to *Pachygnatha*; the chelicera do not diverge nearly at right angles, but are

scarcely separated towards the apex; abdomen globose, united to the cephalothorax by a long, nodose peduncle resembling that of the Ants; median eyes placed upon a common elevation, the posterior more distant from the posterior lateral eyes than from each other, the anterior nearly contiguous; the lateral eyes also contiguous; length of legs decreasing as follows:—1, 2, 4, 3. Sp. *F. mutinensis*, Canestrini, *l. c.* p. 197, and *F. pallida*, Canestrini, *l. c.* p. 199, near Modena.

Linyphia rubecula, sp. n., Canestrini, *l. c.* p. 200, North Italy.

Epeïridæ.

Herman describes the external sexual organs of *Epeïra quadrata* (Verh. zool.-bot. Ges. in Wien, xviii. pp. 923–930).

Wyman has observed the destruction of the males of a species of *Epeïra* by the female, he says, "after the union of the sexes." One female was observed to have killed five males (Proc. Bost. Soc. Nat. Hist. xi. p. 287).

Wilder publishes some notes on the emission of floating threads by *Nephila plumipes*. Amer. Natural. ii. p. 214.

Simon (Rev. et Mag. Zool. 1868, p. 449) describes *Epeïra pallida* (Oliv.) and its varieties.

Thorell (Eugenies Resa, Zool., Arachn. i.) describes fully the following species, of which he published diagnoses in the Œfvers. Kongl. Vet.-Akad. Förh. for 1859:—*Gasteracantha vaccula*, p. 12; *G. vittata*, p. 13; *G. varia*, p. 14; *G. mœsta*, ibid.; *G. hilaris*, p. 15; *G. ensifera*, p. 16; *G. ornata*, ibid.; *G. insulana*, p. 17; *G. mammeata*, p. 18; *G. guttata*, p. 19; *G. horrens*, p. 20; *G. minax=flavo-maculata* (Keys.), p. 21; *G. parvula*, ibid.; *G. tuberosa*, p. 22; *G. tabulata*, p. 23; *G. modesta*, p. 24; *Acrosoma forcipatum*, p. 25; *A. bovinum*, p. 26; *A.*(?) *stelligerum*, ibid.; *Argiope avara*, p. 27; *A. opulenta*, p. 28; *A. elegans*, p. 29; *A. manicata*, p. 30; *A. nigro-vittata*, p. 31; *A. cuspidata*, p. 32; also *A. clathrata* (Koch)=*australis* (Walck.)=*læta* (Thor.), p. 30; *Nephila fenestrata*, p. 33; and *N. annulata*, p. 34.

New genera and species:—

Celænia, g. n., Thorell, Eugenies Resa, Zool., Arachn. i. p. 1. Cephalothorax obcordato-orbiculate, head minute, clypeus elevated, thorax convex; eyes eight, small, subequal, in two subparallel series, median almost in a square, lateral contiguous; falces perpendicular; labium transverse, rounded at apex; legs 1, 2, 4, 3, with three claws, the upper ones unequal on the four anterior, the exterior much the longer, equal on the four posterior; abdomen large; mamillæ 6, two anterior conical, the rest subcylindrical. Sp. *C. kinbergii*, sp. n., Thor. *l. c.* p. 1, Sydney.

Cærostris, g. n., Thorell, *l. c.* p. 3. *Gasteracantha* (Koch) ex parte; *Eurysoma* (Blackw.) ex parte. Cephalothorax subquadrate, elevated in front, and with two transverse rows of tubercles, posterior row of four, anterior of three tubercles, the latter bearing the eyes; median eyes forming a trapezium, which is much wider behind; falces very stout, perpendicular; maxillæ suborbiculate; legs 1, 2, 4 (4, 2), 3, with three claws, the superior pectinate; abdomen large, subtransverse, concealing the posterior part of the cephalothorax, soft, pilose, tuberculate, marginal ocelli wanting; mamillæ 6, conical, Sp. *Epeïra mitralis* (Vins.), p. 4; *C. keyserlingii*, sp. n., Thorell, *l. c.* p. 7, Caf-

fraria; *C. wahlbergii*, sp. n., Thor. ibid., Caffraria; *C. vinsonii*, sp. n., Thor. *l. c.* p. 8, Caffraria, perhaps = *A. sex-cuspidata* (Fab.). *E. tuberculosa* (Vins.) also belongs to this genus, and probably *Eurysoma vicina* (Blackw.).

Peniza, g. n., Thorell, *l. c.* p. 10. *Eurysoma* (Blackw.) ex parte. Cephalothorax oblong, narrowed in front, pretty uniformly convex; eyes 8, median nearly in a square, lateral very remote, contiguous upon a tubercle at the frontal angle; falces short, stout, conical, subperpendicular; legs short, 1, 2, 4 nearly equal, 3 shorter; abdomen subcoriaceous, unarmed, with a marginal circle of ocelli. Sp. *Eurysoma thorntonii* and *walleri* (Blackw.); *P. testudo*, sp. n., Thorell, *l. c.* p. 10, Caffraria (perhaps = *thorntonii*, Blackw.).

Epeira ornata, Canestrini, Ann. Soc. Nat. Modena, iii. p. 200, and *E. biocellata*, Canestrini, *l. c.* p. 201, Modena.

Singa laurœ, Simon, *l. c.* p. 452, near Vaucluse.

ADELARTHROSOMATA.

Cheliferidæ.

Hagen publishes (Proc. Bost. Soc. N. H. xi. pp. 323–325) a notice of the occurrence of a species of *Chelifer* adhering to flies, and also under the elytra of beetles. He thinks that the *Chelifer* attaches itself in this way to the bodies of insects in order to be transported from place to place. B. P. Mann (*l. c.* p. 325) mentions an instance of *Chelifer* being found under the elytra of *Alaus oculatus*. Hagen's remarks are partially reproduced in Amer. Natural. ii. p. 216, where *Chelifer cancroides* is figured.

According to Hagen (Proc. Bost. Soc. N. H. xi. p. 435), *Chelifer muricatus* (Say) = *cancroides*. Hagen has determined 9 American species:—1 of *Chthonius*, resembling *C. maculatus* (Menge); 4 of *Chelifer*; 2 of *Chernes*, 1 new; and 1 of *Pelorus*.

[Cyphophthalmidæ.]

G. Joseph has discovered, in the Luëger cave in Carniolia, a small Arachnidan, allied in its general structure, to the Phalangiidæ, but which he regards as the type of a new family. It has an oval body, convex above, nearly flat beneath, covered with a very hard skin. The abdomen is of 8 segments. The palpi are filiform and six-jointed; the chelæ are three-jointed; and the mouth is adapted for sucking, the maxillæ being represented by small pyramidal bodies, each bearing a peculiar hook-like process, terminated by a spongy knob, whilst within the mouth there is a narrow, ribbon-like membrane, probably representing the tongue. The eight legs are six-jointed, two joints forming the tarsus, which is terminated by a single claw. The eyes are supported upon conical processes, springing from the sides of the cephalothorax. Respiration is performed through two stigmata, placed in the lateral angles of the first abdominal segment. The sexual orifice in the ♀ is situated between the fourth pair of hypopodia, and bounded behind by an obtuse process of the first abdominal segment, from which point, also, the penis of the ♂ is protruded. (Berl. ent. Zeitschr. 1868, pp. 241–250 and 269–272.)

Cyphophthalmus, g. n., Joseph, *l. c.* p. 249. Sp. *C. duricorius*, sp. n., Joseph, *l. c.* p. 250. The animal lives in the Luëger cave, especially towards the entrance, in company with *Adelops montanus*, *Leptinus testaceus*, and several Phalangiidæ. It was found by the author in various stages of growth; but the youngest forms observed presented a close general resemblance to the adults. It is more active in its movements than *Trogulus*, and was found, in captivity, to feed pretty freely upon dead *Podurœ* and upon the pupæ of ants.

ACARINA.

Claparède has published (Zeitschr. für wiss. Zool. xviii. pp. 445–546, pls. 30–40) an elaborate memoir on the anatomy, physiology, and natural history of the animals of this order. He refers to the genus *Atax*, of which he distinguishes three species, namely:—*A. ypsilophorus* (Bouz), with which *Trombidium notatum* (Rathke), *Limnochares anodontæ* (Pfeif.), and *Hydrachna concharum* (Vogt) are identical; *Atax* (*Hydrachna*) *crassipes* (O. F. Müll.); and a species which Claparède proposes to name *Atax bouzi*, sp. n. (*l. c.* p. 451, pl. 32. figs. 4–7). The development of this species is described by Claparède in great detail (*l. c.* pp. 451–465), and the anatomy of the mature individuals (*l. c.* pp. 465–470). The author then compares his *Atax bouzi* in all these respects with the allied species, and especially with *A. ypsilophorus*. The details of the development of *A. bouzi* are illustrated upon plates 30–32, and the comparative anatomy of the species of *Atax* on plate 33.

Claparède also describes the anatomy and development of *Tetranychus telarius* (Linn.), *l. c.* pp. 480–490, pl. 40, and adds that *Leptus autumnalis* (Shaw) agrees so closely with *T. telarius* in its structure that it cannot be separated generically from *Tetranychus*. The larva and perfect ♂ of *T. telarius* are figured by Claparède, *l. c.* pl. 40. figs. 14, 15.

After describing the developmental history of *Tyroglyphus* (*l. c.* pp. 490–493, pl. 38. figs. 1–6), Claparède shows that the genus *Hypopus* (Dugès) is founded upon the male forms of certain species of *Tyroglyphus*, the development of which is fully described and illustrated (*l. c.* pp. 493–507, pl. 35). He describes also the development of an *Hoplophora*, which he identifies with the species described by Perty as *Phthiracarus contractilis* (*l. c.* pp. 507–519, pl. 34), the anatomy and development of *Myobia musculi* (Schrank), with which he regards Heyden's *M. coarctata* as identical (*l. c.* pp. 519–530, pl. 37. figs. 1–4), and the structure of *Dermaleichus musculinus* (Koch), for which he proposes to form a new genus, *Myocoptes* (*l. c.* pp. 530–534, pl. 39. figs. 1–9). In the concluding section of his memoir he cites, in favour of the Darwinian theory, some observations on the clinging-organs possessed by many Acarina

(*l. c.* pp. 535–538), referring especially to *Listrophorus leuckarti* (pl. 39. figs. 10–12).

The following species are figured by Claparède in the mature state:—*Hypopus dujardinii*, pl. 35. figs. 1 & 6–8; *Hoplophora contractilis*, pl. 36. figs. 15–18; *Myobia musculi* (Schr.), pl. 37. figs. 1 & 3; *Hypopus dugesii*, pl. 37. fig. 6; *Rhizoglyphus robini*, pl. 38. figs. 7–9.

Robin (Comptes Rendus, lxvi. pp. 776–786) publishes a detailed account of his observations on the Mites infesting birds, and states that in these the males pass through four, and the females through five stages, as follows:—1, the egg; 2, the *hexapod larva*; 3, the *octopod nymph*, without sexual organs; 4, *sexual males* or *females without external sexual organs*, but which copulate; 5, the *sexual and fecundated females*. The author then treats of the habits of the Mites in some detail, and states that the ova are developed in the nymph-like females before their final moult. In a note (*l. c.* p. 786) Robin gives a list of the species on which his observations were made, most of which are new, and will be described in his memoir. They include the types of four new genera, namely, *Pterolichus*, *Pteronyssus* (type *Dermal. picinus*, Koch), *Proctophyllodes* (type *D. glandarinus*, Koch), and *Pterodectes*.

Boisduval (Entomologie horticole, pp. 82–96) gives a detailed popular account of the principal species of Acarina which are mischievous in gardens, with descriptions of one or two which are rather beneficial than injurious. The species described are *Acarus telarius*, figured p. 83, *A. cucumeris*, *A. rosarum*, *A. tiliarum*, *A. coccineus*, *A. cinnabarinus*, *A. hæmatodes*, *A. pyri*, *A. russulus*, *A. fungorum*, *A. ferrugineus*, *A. tini*, *A. lintearius*, *A. vitis*, *Leptus autumnalis*, *Trombidium holosericeum*, and *Oribata*.

W. J. Hays publishes a short account, with figures, of a species of Tick found in abundance on a Moose Deer. Amer. Natural. ii. p. 559, fig. 1, showing the adult and young, and the foot and mouth of the latter.

Tetranychus lintearius. Lucas describes the habits of this species, which he observed forming delicate webs upon furze bushes. Ann. Soc. Ent. Fr. 4e sér. viii. pp. 741–743.

Lichtenstein (Bull. Soc. Ent. Fr. 1868, p. lxxxvi) notices an Acaride living upon the larvæ of Hymenoptera, for which he proposes the name of *Physogaster larvarum*. Its abdomen is vesicular.

Rhyncholophus œdipodarum, sp. n., Frauenfeld, Verh. zool.-bot. Ges. in Wien, xviii. pp. 889–893, Austria. Parasitic in the hexapod stage upon species of *Œdipoda*.

Cyclothorax carcinicola, Frauenfeld, Verh. zool.-bot. Ges. in Wien, xviii. pp. 893, 894 (*cum figg.*), hexapod form on the abdomen of *Carcinus tibicen* (Herbst), from the Nicobars.

Acarus? *malus*, sp. n., Shimer, Trans. Amer. Ent. Soc. i. p. 368, note, United States, parasitic on the "Apple Barklouse."

MYRIOPODA

BY

W. S. Dallas, F.L.S., &c.

Lubbock, Sir John. On *Pauropus*, a New Type of Centipede. Trans. Linn. Soc. vol. xxvi. pp. 181–190, plate 10.

Meinert, F. Danmarks Chilognather. Naturhistorisk Tidsskrift, 3rd series, vol. v. pp. 1–32.

——. Danmarks Scolopendrer og Lithobier. Ibid. pp. 241–268.

Boisduval (Entomologie horticole, pp. 53–64) characterizes the common Myriopoda of Gardens. He adopts the orders Diplopoda and Chilopoda, and describes under the former *Julus sabulosus*, *J. fragariarum*, and *J. terrestris*, and under the latter *Scutigera coleoptrata*, *Cryptops hortensis*, *C. savignyi*, *Lithobius forcipatus* (figured p. 61), and *Geophilus carpophagus*.

Chilopoda.

Lucas communicates an example of ovoviviparous reproduction in a *Scolopendra* living in Guiana. The female produced 40 young *Scolopendræ*, measuring about 20 millimetres in length, each composed of 21 segments, which was the number in the mother. Bull. Soc. Ent. Fr. 1868, p. xlvii.

Meinert has supplemented the paper upon the Danish Geophilidæ published by himself and Bergsöe by a memoir on the Scolopendridæ and Lithobiidæ of Denmark (Naturh. Tidsskr. v. pp. 241–268). Of the former group he describes *Cryptops agilis*, sp. n. (*l. c.* p. 244), which, however, is probably identical with *C. savignii* (Leach). The Lithobiidæ he regards as forming two tribes—the *Scutigerini*, unrepresented in Denmark, and the *Lithobiini*, upon the characters and anatomy of which he dwells at considerable length, and of which the following known species are described by him:—*L. forficatus* (Linn.), *L. coriaceus* (Koch), *L. agilis*? (Newp.), *L. bucculentus* (Koch), *L. crassipes* (Koch), *L. erythrocephalus* (Koch), and *L. calcaratus* (Koch). Meinert characterizes a new genus as follows :—

Lamyctes, g. n., Meinert, *l. c.* p. 266. Labrum free, deeply incised in the middle, dentate, narrowly and scantily fringed at the sides; mandibles with an entire series of small dentate setæ behind the larger dentate setæ; first pair of maxillæ with ramose and simple setæ; second pair of maxillæ (labium) small, with a few simple setæ; first pair of maxillar feet with a 5-partite claw; (eyes with a single ocellus); legs all unarmed; larger claw with a large seta; claw of ♀ generative organs round, entire. Sp. *L. fulvicornis*, sp. n., Meinert, *l. c.* p. 267, Jylland and the islands. Meinert remarks upon

the agreement in the structure of the eyes between this form and *Henicops* (Newp.), but regards the two genera as distinct.

Meinert also describes the following new species:—*Lithobius intrepidus*, *l. c.* p. 262, Denmark; *L. borealis*, *l. c.* p. 263, Faroe Islands; *L. microps*, *l. c.* p. 265, in the Palm-house at Copenhagen.

Chilognatha.

Lubbock has published (Linn. Trans. xxvi. pp. 181–190, pl. 10) the detailed description with figures of his *Pauropus huxleyi* (see 'Record,' 1866, pp. 266, 267).

Meinert publishes (Naturh. Tidsskr. 3rd series, v. pp. 1–32) a monographic revision of the Danish species of this order, which he prefaces with a short general account of their structure, with especial reference to the parts of the mouth. He distinguishes a labrum, which is usually coalescent with the forehead, and three pairs of buccal organs. Of these the second and third pairs (maxillæ and labium) are amalgamated, and situated on the same plane. The most characteristic parts of the maxillæ are the pedicles (*stipites maxillares*) and maxillary plates (*laminæ maxillares*), the latter being transverse plates situated between the hinge-joints, and regarded by the author as representing the sternal part of this pair of appendages. The *lamina labialis* is a triangular plate representing the sternal part of this pair; and behind this, when it is present, or behind the maxillary laminæ, there is a vaulted transverse plate, the *hypostoma*. The antennæ are said by the author to consist generally of eight joints, the last joint being always very small and concealed.

The author divides the order into two primary sections, characterized as follows:—

Section I. Body crustaceous; labrum connate, emarginate, with three horny teeth; mandibular stalks entirely exposed; maxillar pedicles appendiculate, exposed; antennæ indistinctly 8-jointed; legs not more than 7-jointed; anus in last segment, with an anal lamina. Families *Julidæ*, *Polydesmidæ*, and *Glomeridæ*.

Section II. Body horny; labrum separate, emarginate, not toothed; mandibular, labial, and maxillar pedicles partly concealed, the latter not appendiculate; antennæ distinctly 8-jointed; legs 8-jointed, except first and second pairs; anus in penultimate segment, anal plate 0. *Polyxenus*.

The genera referred to are:—*Julus* with 11 species (6 new), *Blaniulus* with 2 species (1 new), *Isobates* with 1 species, *Polydesmus* with 1 species, *Craspedosoma* with 2 species, *Glomeris* with 1 species, and *Polyxenus* with 1 species.

The new species are:—*Julus luscus*, Meinert, *l. c.* p. 9, beech-woods of North Zeeland; *J. fœtidus*, Meinert, *l. c.* p. 11, Denmark generally; *J. sjælandicus*, Meinert, *l. c.* p. 13, near Sorö; *J. silvarum*, Meinert, *l. c.* p. 13 (= *J. luridus*, Porath *nec* Koch), Denmark generally; *J. fallax*, Meinert, *l. c.* p. 15 (=*J. ferrugineus*, Porath *nec* Koch), near Copenhagen; and *J. rugifrons*, Meinert, *l. c.* p. 17, Sorö and Copenhagen.

Blaniulus venustus, Meinert, *l. c.* p. 20 (=*J. pulchellus*, Koch *nec* Leach), Denmark generally.

INSECTA

BY

W. S. Dallas, F.L.S., M.E.S.

A. *Separate Works.*

Boisduval —. Essai sur l'Entomologie horticole, comprenant l'Histoire des Insectes nuisibles à l'Horticulture, avec l'indication des Moyens propres à les éloigner ou à les détruire, et l'Histoire des Insectes et autres Animaux utiles aux Cultures. 8vo, pp. 648. Paris, 1867.

In this work Boisduval describes, in a semipopular manner, the various insects which are injurious to horticulture, including under the term insects all the Arthropod classes of which representatives are found in gardens. The quality of the work is not very high, yet it will be useful not only as a guide to the gardener in combating his insect foes, but as furnishing a considerable mass of general entomological information, illustrated by examples taken from among our commonest and most accessible insects, such as may serve greatly to assist the beginner. The lower forms of the Rhynchota (*Aphides* and *Coccidæ*) are treated by the author at greatest length.

Newman, E. The Insect-Hunter's Year-book for 1867. 8vo. London: E. Newman, March 1, 1868.

This work is said by its author to be "an attempt to establish a chronological and systematic record of discoveries and observations in British Entomology," a purpose which seems to have been already pretty well fulfilled by Stainton's 'Entomologist's Annual.' It includes only Lepidoptera and Coleoptera. The majority of the species referred to are briefly characterized.

Wagner, Moritz. Die Darwin'sche Theorie und das Migrationsgesetz der Organismen. 8vo, pp. 62. Leipzig, 1868.

The author cites numerous instances to prove that in order to account for the production of new species by the operation of the laws embraced by Darwin under the general term "natural selection," with the assistance of the "struggle for existence," another law is necessary, namely, the "law of migration of organisms." Migration may be active or passive: the former

will operate more rapidly and over wider spaces; but both are liable to be limited by natural geographical boundaries, such as broad rivers, mountain-chains, and arms of the sea, of course in varying degrees, according to the facilities for diffusion possessed by the different organisms. In reality the author's arguments lead to the conclusion that isolation is a necessity for the production of new forms by transmutation, and that it is by means of migration that this is brought about, which will probably be admitted in the majority of cases by most Darwinians; but the examples cited by him will be found very interesting and instructive.

B. *Works in progress.*

L'Abeille. Mémoires d'Entomologie par M. S. A. de Marseul, avec la collaboration de plusieurs membres distingués de la Société Entomologique de France. Tome v. livr. 1–5 : 1868.

Five parts of this periodical were actually published in 1868; the sixth part, completing the volume for last year, appeared on the 25th February, 1869. The contents of these parts relate exclusively to Coleoptera.

Packard, A. S. A Guide to the Study of Insects, and a Treatise on those injurious and beneficial to Crops. Parts I. & II. 8vo, pp. 128. Salem, 1868.

In this work Dr. Packard aims at giving the outlines of the natural history of insects, in a simple popular form, with as little use as possible of technical terms. The Recorder has seen only two parts of it, which were kindly sent to him by the author: these were published in June and July of last year; and as the whole is stated to consist of 8 or 10 such parts, the work is probably by this time completed. The portion before the Recorder, however, is quite sufficient to enable him to speak of the general character of the work, which, as might be expected from the deservedly high reputation of its author, is of admirable quality. Dr. Packard commences with a general account of the anatomy and physiology of insects, which is far superior to anything of an elementary nature that we possess; he then briefly treats of the geographical and geological distribution of insects, of their diseases and deformities, and of the methods of collecting and preserving them. A list of some of the principal works in various departments of entomology is then given; and this is followed by the systematic part of the work, of which only a small portion, including the higher forms of Hymenoptera, is given in the second part. The author regards all the Arthropoda, with the exception of the Crustacea, as forming "the class of insects," which he divides into the three orders *Hexapoda*, *Arachnida*, and *Myriapoda*. The Hexapoda, or true insects, are regarded by the author as forming two se-

ries—the higher including the Hymenoptera, Lepidoptera, and Diptera, and the lower the Coleoptera, Hemiptera, Orthoptera, and Neuroptera. The last-mentioned group is placed by the author, in a diagrammatic arrangement, as a sort of common term belonging to, or uniting both series; *Lepisma* and *Podura* are said to lead from the Neuroptera to the Myriapods, through *Pauropus* (Lubb.); and the connexion between the Hexapoda and Arachnida is through the wingless flies, such as *Braula*, *Chionea*, and *Nycteribia*, which present a general resemblance to Spiders. The higher series culminates in *Apis*, and the lower one in *Cicindela*.

The anatomical portion of this treatise is illustrated with numerous and excellent woodcuts; and the second part contains two plates of figures, engraved on wood, illustrating a few of the chief forms of fossil insects, and the parasites of the Hive-Bee.

C. *Papers published in Journals &c.*

Eaton, A. E. Remarks upon the homologies of the Ovipositor. Trans. Ent. Soc. Lond. 1868, pp. 141–144.

Erber, Josef. Bericht über eine Reise nach Rhodus. Verh. zool.-bot. Ges. in Wien, Band xviii. pp. 903–908.

Contains notices of a few species of Insects.

Frauenfeld, G. von. Zoologische Miscellen. XIV. Verhandl. zool.-bot. Gesellsch. in Wien, Band xviii. pp. 147–166.

Contains the description of a new genus of Diptera, notices of the metamorphoses of several species of Coleoptera and Diptera, and a note of the capture of *Castnia inca* (Walk.) in Europe.

——. Beiträge zur Fauna der Nicobaren. II. Ibid. pp. 289–300.

This paper contains a list of the annulose animals detected on the Nicobars during the visit of the 'Novara' to those islands. The insects occupy pp. 289–293.

——. Zoologische Miscellen. XV. Ibid. pp. 885–902.

Girard, Maurice. Note sur l'entomologie de l'Amérique du Nord considérée spécialement au point de vue des espèces identiques et analogues à celles d'Europe, avec indications de mœurs inédites, d'après les collections du Canada et de la Nouvelle Ecosse du palais de l'Exposition Universelle de 1867, et la collection du Mexique exposée au Ministère de l'Instruction publique. Annales Soc. Entom. France, 4e sér. tome viii. pp. 287–296.

——. Quelques observations sur la collection entomologique du Japon à l'Exposition Universelle de 1867. Bull. Soc. Ent. France, 1868, pp. iii–v.

Girard, M. Observations sur les collections entomologiques du Pavillon de l'isthme de Suez à l'Exposition Universelle de 1867. Bull. Soc. Ent. France, 1868, pp. ix–xi.

——. Observations sur les collections entomologiques des Principautés Danubiennes à l'Exposition Universelle de 1867. Ibid. pp. xv–xvi.

——. Observations sur les collections entomologiques de l'Australie à l'Exposition Universelle de 1867. Ibid. pp. xxiii–xxiv.

——. Note sur les collections entomologiques du Vénézuèla et de la Guyane anglaise à l'Exposition Universelle de 1867. Ibid. p. xxxi.

——. Observations relatives aux objets d'entomologie appliquée de l'Exposition Universelle de 1867. Ibid. pp. xxxiv–xxxvi, & pp. lvii–lix.

Kaltenbach, J. H. Die deutschen Phytophagen aus der Klasse der Insekten. Fortsetzung. Verhandl. naturhist. Vereins preuss. Rheinl. und Westph. 1867, pp. 21–117.

This is a continuation of Kaltenbach's list of German plant-eating insects arranged according to their food-plants (see 'Record,' 1864, p. 331). It includes the names of plants under the letters Q and R: the former letter is represented only by the genus *Quercus*; but this, as might be expected, occupies considerable space. The new species described here by Kaltenbach will be referred to in their proper places.

Packard, A. S. On the Structure of the Ovipositor and homologous parts in the Male Insect. Proc. Bost. Soc. N. H. vol. xi. pp. 393–399.

——. The parasites of the Honey-Bee. American Naturalist, vol. ii. pp. 195–205, plates 4 & 5.

This paper, founded chiefly upon the work of Assmuss on the same subject, contains a general account of the chief parasitic enemies of the Hive-Bee. It will be further referred to under "Hymenoptera."

Pettigrew, James Bell. On the mechanical appliances by which Flight is attained in the Animal Kingdom. Linn. Trans. vol. xxvi. pp. 197–277, plates 12–15.

In this elaborate dissertation on the mechanism of flight the author devotes considerable space to the consideration of this function in insects.

Pryer, W. B. Entomology of Shanghai. Journ. N. China Branch Roy. Asiatic Soc. n. s. no. iv. pp. 74–79.

A brief account of the common forms of insects observed at Shangai.

Scudder, S. H. The Insects of Ancient America. American Naturalist, vol. i. pp. 625–631, pl. 16.

In this paper Scudder gives a general account of the remains of insects discovered in the palæozoic strata of North America.

Trimen, Roland. Aspects of Insect-life in South-eastern Africa. Ent. Monthly Mag. vol. iv. pp. 212–223.

In this paper the author describes his general impressions of the insect-life of Natal. It includes some interesting remarks especially upon the occurrence of mimicry among Butterflies.

Scudder (Proc. Bost. Soc. N. H. xi. pp. 117–118) notices a collection of fossil insects of various orders, but chiefly Diptera, from Miocene beds of the Green River, Colorado.

Scudder also notices (*l. c.* p. 150) the occurrence of remains of insects (Neuroptera) in the Devonian rocks of New Brunswick.

H. W. Kidd and Albert Müller publish a list of plants growing commonly in this country upon which galls are known or said to occur. Ent. M. Mag. v. pp. 118–120.

Taschenberg publishes (Zeitschr. ges. Naturw. xxxi. pp. 545–547) some remarks upon injurious insects of various orders.

Bidie notices various insects (chiefly Coleoptera) injurious to the coffee-plantations in Southern India. Proc. Ent. Soc. Lond. 1868, pp. xxviii–xxxii.

Hagen notices a specimen of *Morpho ilioneus* with the head of the larva, and mentions other recorded examples of the same malformation in *Dicranula vinula*, *Nymphalis populi*, and *Cybister limbatus*. Proc. Bost. Soc. Nat. Hist. xii. pp. 163, 164.

Goureau communicates a note on the insects which live upon the leaves of the Alder (Bull. Soc. Ent. Fr. 1868, pp. xvi–xviii). He enumerates *Ennomos alniaria*, *Galleruca alni*, *Lithocolletis klemanniella*, *Emphytus melanopygus*, and *E. pumilus*. The *Lithocolletis* is attacked by a species of *Encyrtus*, and *Emphytus melanocephalus* by a *Campoplex*, probably *C. cerophagus*.

Goureau publishes a note on the insects living on *Senecio aquaticus* (*l. c.* pp. cxiii–cxv). He records a species of *Lixus*, *Saperda angusticollis*, *Agromyza ænea*, *Spilographa zoë* (Macq.), and *Enchelia jacobææ*. *Mordellistena subtruncata* occurs also, and probably feeds on the Dipterous larvæ.

T. A. Marshall notices the occurrence on the Maladetta, at an altitude of 11,000 feet, of numerous specimens of a *Chrysopa*. On the glacier of the Vignemale he found *Ichneumon antennatorius* (Grav.) resting on the snow, each specimen at the bottom of a small pit. He also met with numerous specimens of a moth (probably *Plusia gamma*) and a few of *Lygæus equestris*. Ent. M. Mag. v. p. 170.

J. A. Smith publishes some notes, chiefly by A. White, on insects received from Old Calabar. Proc. Roy. Phys. Soc. Edinb. 1864–65, pp. 310–311.

E. Bobert has found that a strong solution of camphor in alcohol is a means of preserving trees from the attacks of boring insects. He planes off the outer part of the bark, and impregnates the exposed surface with the solution by means of a brush. Bull. Soc. Ent. Fr. 1868, p. xcv.

B. P. Mann recommends a solution of carbolic acid in water for the preservation of larvæ. Proc. Bost. Soc. Nat. Hist. xii. p. 163.

COLEOPTERA.

A. *Separate Works.*

Pascoe, F. P. A list of Australian Longicorns, chiefly described and arranged by Francis P. Pascoe, with additional localities and corrections by George Masters. 8vo. Sydney, 1868, pp. 27.

A catalogue founded upon an abridgement of Pascoe's paper on Australian Longicornia, published in the Proceedings of the Linnean Society (see 'Record,' 1866, p. 287, and 1867, p. 214).

Tournier, Henri. Description des Dascillides du Bassin du Léman. 8vo. Bâle and Geneva, 1868, pp. 96, 4 plates.

This work, published by the "Association Zoologique du Léman," furnishes a monograph of the Dascillidæ of the neighbourhood of the Lake of Geneva. It is worked out very thoroughly.

B. *Works in progress.*

Harold, E. von, and Gemminger, B. Catalogus Coleopterorum. Tom. i–iii. 8vo. Munich, 1868.

In this most important work the authors have endeavoured to cite all the described species of Coleoptera. As far as the genera, the subjects are systematically arranged; the species under each genus are in alphabetical order, a mode of arrangement which, in a great compilation of this kind, is always the best. Numerous changes have been made by the authors in the names of genera and, especially, of species, in consequence of *doubles emplois* revealed by their thorough investigation of the literature of Coleoptera; but their work will prove so thoroughly indispensable to every student of this order that any reference here to particular cases will be unnecessary. The portion published in 1868 reached the Scarabæidæ.

Lacordaire, T. Genera des Coléoptères, ou exposé méthodique et Critique de tous les Genres proposés jusqu'ici dans cet Ordre d'Insectes. Tome viii. pp. 552. Paris, 1869 (published November, 1868).

This eighth volume of Professor Lacordaire's great work is almost entirely devoted to the Longicornia—the Trictenotomidæ, the only other family treated in it, occupying but the first four pages. Of the Longicornia the volume contains the Prionides and the greater part of the Cerambycides (the latter including *Leptura* and its allies).

Matériaux pour servir à la Faune des Coléoptères de France,

recueillis et publiés par le Dr. A. Grenier. 2e Cahier. 8vo. Paris, 1867, pp. 131–194.

In this work Grenier publishes descriptions of numerous new species of French Coleoptera, by Pandellé, Brisout de Barneville, and others, and a monograph of the European species of the genus *Trechus* by the first-named author.

Redtenbacher, L. Reise der österreichischen Fregatte Novara um die Erde. Zoologischer Theil. Band ii. Coleoptera. Vienna, 1867, pp. 249, with five plates.

This part of the great work on the natural history of the voyage of the 'Novara' contains a list of the species of Coleoptera collected by the naturalists who took part in it. A great number of species are described as new, and many of these as forming the types of new genera.

C. *Papers published in Journals &c.*

* *Descriptive.*

Ancey, Félix. Rélation d'un voyage en Syrie (Mai et Juin 1867). L'Abeille, tome v. pp. 148–170.

In this paper the author gives an account of a short but very successful journey made by him in Syria for the purpose of collecting Beetles. The new species are described by De Marseul.

Bates, Frederick. Descriptions of New Genera and Species of *Heteromera*. Trans. Entom. Soc. Lond. 1868, pp. 259–274, pl. 12 : September 1868.

Bates, H. W. Descriptions of three new Species of *Ctenostoma*. Ent. Monthly Mag. vol. iv. pp. 276–279.

Contains some notes on the genus.

——. Notes on Genera and Species of *Copridæ*. Coleopt. Hefte, iv. pp. 87–91 : 1868.

Bedel, Louis. Monographie des Erotyliens (Engides et Triplacides) d'Europe, du nord de l'Afrique, et de l'Asie occidentale. L'Abeille, tome v. pp. 1–50.

Bertolini, Stefano. Neue Käferarten des Trentinogebietes. Verh. zool.-bot. Gesellsch. in Wien, Band xviii. pp. 119–120.

Bethe —. Entomologisches vom Ostseestrande. Stettiner entom. Zeitung, 1868, pp. 44–51.

Burmeister, H. Bemerkungen über die Gattungen *Barypus*, *Cardiophthalmus* und *Odontoscelis*. Stettiner ent. Zeitung, 1868, pp. 225–229.

Capiomont, G. Révision de la Tribu des *Hypérides*, Lacordaire, et en particulier des genres *Hypera*, Germ., *Limobius*, Schönh., et *Coniatus* (Germ.), Schönh., renfermant la description de plusieurs genres nouveaux et de 85 espèces

nouvelles. (Suite.) Annales Soc. Entom. France, 4e serie, tome viii. pp. 73–286, pls. 1–4.

This is the completion of Capiomont's memoir, of which the former part was noticed in the 'Record,' 1867, pp. 209 & 275.

Chaudoir, Baron de. Descriptions d'espèces nouvelles ou peu connues de *Feronia* d'Europe et du Bassin Méditerranéen. L'Abeille, tome v. pp. 219–260 : November 1868.

——. Note monographique sur le genre *Omophron*. Rev. et Mag. de Zool. 1868, pp. 54–63.

——. Observations synonymiques sur les Carabiques de l'Amérique septentrionale et descriptions d'espèces nouvelles de ce pays. Rev. et Mag. de Zool. 1868, pp. 161–171, 211–217, 239–245, 283–301, and 331–345.

Desbrochers des Loges, J. Monographie des Balaninidæ et Anthonomidæ d'Europe et des confins méditerranéens. Annales Soc. Entom. France, 4e sér. tom. viii. pp. 331–368 & 411–470.

Dohrn, C. A. Exotisches. Stettiner entom. Zeitung, 1868, pp. 229–243.

In this article Dohrn refers in the first place to the importance of the study of exotic insects, even for the right understanding of European forms, and in the second to a former suggestion of his, that missionaries might furnish much interesting material for the entomologist. This leads to the announcement that he has received a collection of Coleoptera from a mission-station in the district of Hereró, or Owa-hereró, about half way between the Cape Colony and Benguela, upon some of which (*Cetoniides*) he publishes a few notes.

——. *Macrotoma heros*, Heer. Stettiner entom. Zeitung, 1868, pp. 201–215, plate 2.

Dunning, J. W. On the "Coffee-borer" of Southern India (*Xylotrechus quadripes*, Chevrolat). Trans. Ent. Soc. Lond. 1868, pp. 105–132 : April 1868.

Eichhoff, W. Neue amerikanische Borkenkäfer-Gattungen und Arten. (Zweites Stück.) Berliner entom. Zeitschrift, 1868, pp. 145–152.

To this paper descriptions of some species from other parts of the world are appended.

——. Neue Borkenkäfer. Ibid. pp. 273–282.

Fairmaire, L. Essai sur les Coléoptères de Barbarie. Sixième Partie. Annales Soc. Entom. France, 4e sér. tome viii. pp. 471–502.

——, Notes sur les Coléoptères recueillis par Charles Coquerel

à Madagascar et sur les côtes d'Afrique. Première Partie. Ibid. pp. 753–820.

Fauvel, A. Coup-d'œil sur la distribution géographique, en France, des Insectes Coléoptères Carnassiers. Mém. Soc. Linn. de Normandie, vol. xiv. pp. 32, with a map: 1865.

Ferrari, J. A. Nachträge, Berichtigungen und Aufklärungen über zweifelhaft gebliebene Arten in "die forst- und baumzuchtschädlichen Borkenkäfer (Tomicides, Lac.)," &c. Berliner entom. Zeitschr. 1868, pp. 251–258.

Frauenfeld. (See "Insecta.")

Fuss, H. Neue deutsche Käferarten. Berliner entom. Zeitschr. 1868, pp. 353–357.

Gautier des Cottes, —. VIII^me^ Recueil. Mittheil. schweiz. entom. Gesellsch. vol. ii. pp. 321–327: February 1868.
This paper contains descriptions of a few new species, chiefly Carabidæ, from the Mediterranean region.

Girard, M. (See "Insecta.")

Gredler, V. Nachlese zu den Käfern von Tirol. Colcopt. Hefte, iii. pp. 56–79: 1868.

Harold, E. von. Monographie der Gattung *Canthon*. Berliner entom. Zeitschrift, 1868, pp. 1–144.

——. Die Chœrididen-Gattungen *Uroxys* und *Trichillum*. Coleopt. Hefte, iii. pp. 33–55: 1868.

——. Diagnosen neuer Coprophagen. Coleopt. Hefte, iii. pp. 80–86: 1868.

——. Die Arten der Gattung *Chœridium*. Coleopt. Hefte, iv. pp. 32–76: 1868.

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——. Ueber *Bruchus pallidicornis*, Schönh. und Verwandte. Ibid. pp. 313–323.

——. Ueber eine Anzahl für Deutschland neuer *Bruchus*-Arten. Ibid. pp. 324–330.

——. Ueber deutsche Käferarten. Ibid. pp. 331–338.

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trées limitrophes. L'Abeille, tome v. pp. 51–138 : January and March 1868.

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Contains a general account of the author's expedition to the Carpathians of Eastern Galicia, with a list of the Coleoptera collected. Several new species are briefly characterized.

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Paasch, —. Ueber die Fühlhörner einiger Palpicornien. Berliner entom. Zeitschr. 1868, pp. 308–309.

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———. Synopsis des espèces françaises du genre *Proteinus*. Ibid. pp. 168–169.

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Contains a list of species in addition to those cited in the author's 'Käfer von Hamburg und Umgegend.'

Putzeys, J. Les Broscides. Stettiner entom. Zeitung, 1868, pp. 305–379.

Reiche, Louis. Observations sur quelques Carabiques. Coleopt. Hefte, iii. pp. 1–3 : 1868.

Saunders, Edward. Descriptions of fifty new species of the genus *Stigmodera*. Journ. Linn. Soc. Zool. vol. ix. pp. 460–483, pls. 9 & 10 : April 23, 1868.

——. A Revision of the Australian *Buprestidæ* described by the Rev. F. W. Hope. Trans. Entom. Soc. Lond. 1868, pp. 1–67, pls. 1–4 : April 1868.

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Schmidt-Göbel, —. Zur Synonymie der Rhinosimi. Stettiner entom. Zeitung, 1868, pp. 380–382.

Scriba, W. Neue europäische Staphylinen. Berliner entom. Zeitschrift, 1868, pp. 153–160.

Seidlitz, Georg. Die Otiorhynchiden s. str. nach den morphologischen Verwandtschaftsverhältnissen ihres Hautskelet's vergleichend dargestellt. Berliner entom. Zeitschrift, 1868, Beiheft, pp. iv and 153.

In the introduction to this monograph Seidlitz discusses the comparative value of characters derived from external structure and from internal anatomy, especially in the study of insects, and maintains that the former are of most importance systematically, and that this importance increases in an inverse proportion to the extent of the group under investigation. He accepts the hypothesis of evolution in its fullest extent.

Sharp, D. On the British *Gyrinidæ*. Ent. Monthly Mag. vol. v. pp. 52–60.

Solsky, S. Etudes sur les Staphylinides du Mexique. Horæ Soc. Ent. Ross. v. pp. 119–144, plate 4.

——. Staphylinides nouveaux. Ibid. pp. 113–115.

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Suffrian, E. Synonymische Miscellaneen, xxxi. Stettiner entom. Zeitung, 1868, pp. 21–23.

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The conclusion of the paper noticed in the 'Record' for 1866,' p. 291, & 1867, p. 217.

Tournier, H. Coléoptères nouveaux d'Europe, d'Algérie et d'Egypte. L'Abeille, tome v. pp. 140–148: March and June 1868.

Wallace, A. R. A catalogue of the Cetoniidæ of the Malayan Archipelago, with descriptions of the new species. Trans. Ent. Soc. Lond. 3rd series, vol. iv. pp. 519–601, plates 11–14: May 1868.

Zimmermann, C. Synopsis of the Scolytidæ of America north of Mexico. With notes and an appendix by J. L. Leconte, M.D. Trans. Amer. Ent. Soc. vol. ii. pp. 141–178: Sept. 1868.

This is a posthumous paper, published by Leconte, and with an appendix by the latter of greater dimensions than the memoir which it accompanies. Numerous new species are described.

† *Anatomical and Physiological.*

Landois, H. Das Gehörorgan des Hirschkäfers (*Lucanus cervus*). Archiv für mikrosk. Anat. Band iv. pp. 88–95, pl. 6.

The auditory organs of the Stag Beetle consist, according to Landois, of small pits situated one on each surface of the terminal lamella of the antennæ.

Owsjannikow, P. Ein Beitrag zur Kenntniss der Leuchtorgane von *Lampyris noctiluca*. Mém. Acad. Sci. de St. Pétersb. tome xi. no. 17. pp. 12, 1 plate.

The author describes the luminosity of the Glowworm in both its larval and perfect states, and particularly describes and figures the minute structure of the luminous organs, which, he says, consist of laminæ composed of grouped epithelial cells. He regards them as glandular organs, the function of which is to secrete a luminous matter—in this, as in some other particulars, differing in opinion from Kölliker.

De Marseul republishes, from the Horæ Soc. Ent. Ross. vol. iv., the descriptions of new species by Morawitz and Solsky (L'Abeille, v. pp. 276-287).

Under the title of "Archéologie Entomologique," De Marseul commences the publication of descriptive memoirs of rather old date, but, which from various causes, are not very accessible to entomologists. The fourth Livraison of L'Abeille, tome v., is occupied by the first portion of these papers; and this, although published in July 1868, as part of tome v., bears the following signature, "L'Abeille, vi. 1867," so that the editor probably intends to make a separate volume of these reprints. The published portion consists of 72 pages, and includes Waltl's descriptions of new Coleoptera from Andalusia &c., published in 1835, and his catalogue and descriptions of Turkish Coleoptera, from the 'Isis,' 1838, the latter not completed.

Kraatz publishes (Berliner ent. Zeitschr. 1868, pp. 283–304) a series of notes on German Coleoptera, supplementary to and elucidatory of his cata-

logue. Many of these relate merely to the local occurrence of species; but others are of more general importance, and will be noticed in their proper places.

Boisduval (Entom. horticole, pp. 103–194) describes the habits of a great number of common Garden-Beetles. Many of them are figured with their larvæ.

Gredler publishes (Col. Hefte, iii. pp. 56–79) a list of additional species of Coleoptera from the Tyrol, with notes upon many of those recorded in his 'Käfer von Tirol.' Two or three new species are described.

G. Joseph publishes (Berl. ent. Zeitschr. 1868, pp. 361–364) a note of Coleoptera collected in an excursion to the mountain near Landeck.

Gerhard publishes (Berl. ent. Zeitschr. 1868, p. 367) a note of Coleoptera collected in the Riesengebirge in July.

Bethe publishes (Stett. ent. Zeit. 1868, pp. 44–51) an account of his coleopterological investigation of the coast of the Baltic near Swinemünde.

Piochard de la Brûlerie communicates a short account of the excursion into Spain made by members of the French Entomological Society, from April to July 1868. Bull. Soc. Ent. Fr. 1868, p. lxxiv.

Crotch publishes (Entomologist, iv. p. 47) some notes on doubtful British Coleoptera. The species referred to are:—*Hispa atra* (Linn.), *Cassida ferruginea* (Fab.), *Eumolpus pygmæus*, *Scydmænus rutilipennis* (Müll.), *Astrapæus ulmi* (Fab.), and *Philonthus cyanipennis* (Fab.).

Crotch publishes (Entomologist, iv. pp. 65–69) some "Notes on Recent Continental publications on Coleoptera," with special reference to British species or to species which may be expected to occur in Britain. He remarks upon Kraatz's notes upon German Coleoptera (see 'Record,' 1867, p. 212), and upon Thomson's supplement to the 'Skandinaviens Coleoptera.'

H. Moncreaff publishes notes on Coleoptera collected at Southsea. Entomologist, iv. pp. 117–118.

E. A. Waterhouse publishes a list of Coleoptera captured by him in Yorkshire and Lincolnshire. Ent. M. Mag. iv. pp. 186–187 & 231.

Frauenfeld (Verh. zool.-bot. Ges. in Wien, xviii. p. 289) gives a list of the species of Coleoptera collected on the Nicobars during the voyage of the 'Novara.' The species are only 14 in number.

A list of the species of Coleoptera found in Vancouver's Island is given by Walker in the Appendix to Lord's 'Naturalist in Vancouver's Island and British Columbia' (vol. ii. pp. 309–311). A considerable number of species are described as new.

Horn publishes (Trans. Amer. Ent. Soc. ii. pp. 123–128) a list of the species of Coleoptera collected by Cope and Leidy during a geological exploration of the mountains of South-western Virginia. The list includes nearly 180 species, some of which are described as new.

Girard notices the Coleoptera contained in a collection made in Mexico by Boucard, and exhibited in 1867 at the Ministry of Public Instruction (Ann. Soc. Ent. Fr. 4e sér. viii. pp. 290, 291).

Girard also notices the collections of injurious and useful Coleoptera exhibited by Mocquerys in the Paris Exhibition of 1867. Bull. Soc. Ent. Fr. 1868, pp. xli–xliv.

Shimer notices (Proc. Amer. Ent. Soc. 1868, pp. vii–viii) the Coleoptera bred by him from dead trees of the Prickly Ash (*Xanthoxylum americanum*). He enumerates *Læmophlœus adustus* (Lec.), *Sacium fasciatum* (Say), *Mieracis suturalis** (Lec.), a species of *Centrinus*, and a new *Liopus*.

* See *Scolytidæ*.

Shimer also notices (*l. c.* pp. viii–ix) some Beetles observed boring in Grape-vines, namely *Amphicerus bicaudatus* (Say), *A. aspericollis* (Germ.), *Callidium amœnum* (Say), and *Lyctus opaculus* (Lec.).

Sidebotham publishes some notes on Wood-eating Beetles of various families (Proc. Lit. & Phil. Soc. Manch. vi. pp. 52–54 and vii. pp. 207–210).

Smith (Proc. Ent. Soc. Lond. 1868, p. xix) notices five larvæ of Coleopterous insects which are known as "borers" among the Indian coffee-planters.

Cicindelidæ.

Cicindela vittigera (Dej.). Redtenbacher (Reise der Novara, Zool. ii. Col. p. 1) notices the variations of this species.

New species :—

Cicindela cimarrona, Leconte, Trans. Amer. Ent. Soc. ii. p. 49, Raton Mountain.

Omus submetallicus, Horn, Trans. Amer. Ent. Soc. ii. p. 129, California.

Ctenostoma cbeninum, Bates, Ent. M. Mag. iv. p. 277, Ega; *C. coreulum*, Bates, ibid., Bahia; and *C. asperulum*, Bates, *l. c.* p. 278, Lower Amazons.

Carabidæ.

Fauvel has published (Mém. Soc. Linn. Norm. xiv.) a memoir on the distribution of the Geodephaga in France. He divides the country into ten regions, viz. Régions océanique, rhénane, séquanaise, armoricaine, centrale, centro-méridionale, méridionale, méditerranéenne, lyonnaise, and alpestre, which he illustrates by means of a coloured map. Besides a great number of common species, each of these regions, according to the author, has its peculiar forms, which are enumerated by him.

Carabides.

Cychrus. Leconte (Trans. Amer. Ent. Soc. ii. pp. 60–61) tabulates the known species of this genus from the United-States territories on the Pacific sea-board. He enumerates 14, one of which is described as new; the others are :—*angusticollis* (Fisch.), *velutinus* (Ménétr.), *marginatus* (Dej.), *cristatus* (Harr.)=*reticulatus* (Motsch.), *angulatus* (Harr.), *striatus* (Lec.), *cordatus* (Lec.), *interruptus* (Ménétr.)=*constrictus* (Lec.), *ventricosus* (Dej.)=*ovalis* (Motsch.), *striatopunctatus* (Chaud.)=*alternatus* (Motsch.), *punctatus* (Lec.), *subtilis* (Schaum), and *tuberculatus* (Harr.).

Omophron. Chaudoir publishes (Rev. et Mag. de Zool. 1868, pp. 54 *et seqq.*) a note upon this genus, in which he enumerates 31 species, 9 of which are described as new. Of described species, *O. tessclatus* (Dej.)=*multiguttatus* (Chaud.), *O. lecontei* (Dej.)=*tessclatus* (Say), *O. sayi* (Kirby)=*americanus* (Dej.), and *O. capensis* (Gory)=*suturalis* (Guér.).

Retenbacher remarks (Reise der Novara, Zool. ii. Col. p. 3) that *Carabus* (*Ceroglossus*) *suturalis* (Fab.), *chilensis* (Eschsch.), and *darwinii* (Hope) are local forms of a single species, to which *C. insularis* (Hope), *reichei* (Guér.), and *buquetti* (Cast.) are also to be referred.

Calosoma vagans (Dej.). Redtenbacher (*l. c.* p. 4) notices a variety of this species with brown elytra.

The larva and perfect insect of *Calosoma calidum* are figured in the American Naturalist (ii. p. 111. figs. 1, 2), also the imago of *C. scrutator* (*l. c.*

fig. 3) and of *Carabus serratus* (*l. c.* fig. 4), and the pupa of *Carabus auronitens* (*l. c.* p. 111. fig. 5).

Kraatz publishes notes on *Notiophilus laticollis* (Chaud.), *palustris* (Duft.), and *biguttatus* (Fab.). *Elaphrus semipunctatus* (Fab.) is regarded by Kraatz as a variety of *N. biguttatus* (Berl. ent. Zeitschr. 1868, p. 284).

New species :—

Calosoma grandipenne, Castelnau, Trans. Roy. Soc. Vict. viii. p. 99, Melbourne.

Calosoma irregulare, Walker, Lord's Naturalist in Vancouver's Island &c. ii. p. 312, Vancouver's Island.

Callistherus pimelioides, Walker, *l. c.* p. 312, Vancouver's Island.

Carabus bicolor, Walker, *l. c.* p. 313, Vancouver's Island.

Procrustes widemanni (Lederer, MS.) Gautier des Cottes, Mitth. schw. ent. Gesellsch. ii. p. 322, Amasia.

Carabus ledereri, Gautier des Cottes, *l. c.* p. 322, Taurus (? = *C. microderus*, Chaud.).

Cychrus obliquus, Leconte, Trans. Amer. Ent. Soc. ii. pp. 60, 61, California.

Promecognathus crassus, Leconte, *l. c.* p. 62, California.

Omophron. Chaudoir (Rev. et Mag. de Zool.) describes the following new species of this genus :—*O. gratus*, *l. c.* p. 56, Mexico ; *O. saïgonensis*, *l. c.* p. 57, Cochin China ; *O. capicola*, ibid., Cape of Good Hope ; *O. dominicensis*, *l. c.* p. 58, St. Domingo ; *O. axillaris*, *l. c.* p. 59, Bengal ; *O. nitens*, *l. c.* p. 60, Texas ; *O. porosus*, *l. c.* p. 61, Deccan ; *O. interruptus*, *l. c.* p. 62, and *O. guttatus*, ibid., Bengal.

Nebria rivosa, L. Miller, Verh. zool.-bot. Ges. in Wien, xviii. p. 5, East Galicia.

Pamborides.

Castelnau (Trans. Roy. Soc. Vict. viii. p. 95) discusses the Australian species of *Pamborus*, which he says are common in New South Wales and Queensland. He regards *P. alternans* and *morbillosus* as identical. He characterizes a new genus, *Lacordairia*, as intermediate between *Pamborus* and *Cychrus*.

Lacordairia, g. n., Castelnau, Trans. Roy. Soc. Vict. viii. p. 96. Intermediate between *Pamborus* and *Cychrus* ; maxillary palpi long, pendent, joint 2 long, broad, and inflated, 4 very large, oval ; anterior tibiæ strongly emarginate. N. sp. *L. cychroides*, Cast. *l. c.* p. 97, Clarence River and Brisbane ; *L. proxima*, Cast. ibid., Victoria ; *L. marginata*, Cast. ibid., Melbourne ; *L. angustata*, Cast. ibid., N. S. Wales ; *L. erichsoni*, Cast. *l. c.* p. 98, Tasmania ; *L. calathoides*, Cast. ibid., Tasmania ; *L. argutoroides*, Cast. ibid., Victoria ; and *L. anchomenoides*, Cast. ibid., Victoria.

Pamborus brisbanensis, sp. n., Castelnau, *l. c.* p. 96, Brisbane ; and *P. maceayi*, sp. n., Cast. ibid., Clarence River.

Brachinides.

Brachinus. Chaudoir has investigated the North-American species of this genus, and publishes the following synonymic notes upon them, accompanied by descriptions (Rev. et Mag. Zool. 1868, pp. 283–301) :—*B. alternans* (Lec.) is probably distinct from *B. alternans* (Dej.), which Chaudoir describes (*l. c.* p. 284) ; *B. deyrollei* of Laferté and Leconte appear to be identical, and *B. tormentarius* (Lec.) is probably a variety ; *B. strenuus* (Lec.) is distinct from

deyrollei; *B. librator* (Dej.) is distinct from *B. fumans*; *B. viridis* (Lec.)= *viridipennis* (Dej.); *B. pumilio* (Lec.)=?*janthinipennis* (Dej.); *B. patruelis* (Dej.), *sufflans*, and *cyanopterus* (Lec.)=*fumans* (Fab.); *B. stygicornis* (Say) =*oxygonus* (Chaud.), and *neglectus* (Lec.) is a variety of it; *B. cordicollis* (Dej.)=*conformis* (Lec.), with *ovipennis* (Lec.) as a variety; *B. cyanipennis* (Say)=*cephalotes* (Dej.)=*cordicollis* (Lec.)+*rejectus* (Lec.).

Brachinus fumans (Linn.) and *Casnonia pennsylvanica* (Dej.) are figured in the American Naturalist (ii. p. 111. figs. 6, 7).

Kraatz (Col. Hefte, iv. p. 94) maintains the identity of *Brachinus berytensis* with *bombarda* (Dej.).

Casnonia olivierii (Buq.). Fairmaire (Ann. Soc. Ent. Fr. 4e sér. viii. pp. 471, 472) publishes some notes on the habits of this species.

Sphærostylus. Fairmaire (*l. c.* pp. 765–766) indicates the characters of the five known species of this genus.

Ophionea chaudoiri (Boh.) belongs to *Casnonia*, according to Redtenbacher (Reise der Novara, Zool. ii. Col. p. 4).

Gomelina binotata (Blanch.) and *Lebia duponti* (Putz.) are referred to *Sarothrocrepis* by Redtenbacher (Reise der Novara, Zool. ii. Col. p. 7).

Reiche gives the following synonymy of species of this group (Col. Hefte, iii. p. 1):—*Cymindis servillei* (Sol.)=*humeralis* (Fab.); *C. confusa* (Peyron)=*seriepunctata* (Redt.); *C. monticola* (Chevr.)=*singularis* (Rosenh.); *Brachinus berytensis* (Reiche) is distinct from *B. bombarda* (Dej.), with which it was identified by Schaum; *B. bombarda* (Ill.)=*mutilatus* (Fab.); *B. bombarda* (Dej., nec Ill.)=*plagiatus* (Reiche); *B. sichemita* (Reiche)=var. *explodens*; *B. atricornis* (Fairm. nec Dej.)=*obscuricornis* (Brullé); *Lebia pubipennis* (Duf.)=*africana* (Sol.)=*fulvicollis* (Fab.); *Masoreus grandis* (Zimm.)=*orientalis* (Dej.).

Lamprias chrysocephala (Motsch.). Rye is inclined to identify this with a small race of *L. chlorocephala* found by him in Hampshire. Ent. M. Mag. iv. p. 190.

Clandon has observed a specimen of *Lebia chlorocephala* preying upon the Aphides in an Ants' nest. The Ants were much disturbed. Bull. Soc. Ent. Fr. 1868, p. xxxix.

New species :—

Brachinus. Chaudoir (Rev. et Mag. Zool. 1868) describes the following new North-American species of this genus:—*B. distinguendus*, p. 287, *B. stenomus*, p. 291, *B. sublævis*, p. 293, *B. puberulus*, p. 294, *B. leptocerus*, p. 296 (=?*velox*, Lec.), *B. rugipennis*, p. 297, *B. texanus*, p. 299, *B. phæocerus*, p. 300. Chaudoir also notices a form sent to him by Leconte from California, under the name of *B. lateralis*, but which he regards as possibly new, and proposes for it the name of *B. leucoloma* (*l. c.* p. 301).

Pachyteles testaceus, Horn, Trans. Amer. Ent. Soc. ii. 129, Arizona.

Tetragonoderus pallidus, Horn, *l. c.* p. 130, California, Arizona.

Cymindis aubei, Tournier, L'Abeille, v. p. 141 (=*homagrica*, var. C, Fairm. & Lab.), Jura.

Helluonides.

Castelnau (Trans. Roy. Soc. Vict. viii. p. 104) gives the following table of the genera into which he divides the Australian species of Lacordaire's tribe *Helluonides*:—

I. Body without wings.
  A. Antennæ more or less cylindrical.
    1. Labrum almost or entirely covering the mandibles.
      * Tooth of mentum short, obtuse ..... 1. Helluo (Bon.).
        (Type *H. costatus*, Bon.)
      † Tooth of mentum very long, slender, acute.
        2. Pseudhelluo, g. n.
    2. Labrum square, not covering mandibles. 3. Acrogonys (M'L.).
      (Type *A. hirsuta*, M'L.)
  B. Antennæ compressed ..... 4. Helluodema, g. n.
II. Body with wings.
  A. Mentum toothed.
    1. Head oval ..... 5. Gigadema (J. Thoms.[1]).
    2. Head inflated behind eyes ..... 6. Helluosoma, g. n.
  B. Mentum not toothed ..... 7. Ænigma (Newm.).
    (Type *Æ. iris*, Newm.)

New genera:—

Anasis, g. n., Castelnau, Trans. Roy. Soc. Vict. viii. p. 101. Allied to *Odacantha*; wings of mentum very short and broad, rounded at apex; max. palpi with joints 3 and 4 large, 3 embracing the base of 4, which is somewhat pointed at apex; joint 3 of antennæ much longer than the following ones; head with a rather long neck; prothorax narrower than head, fusiform. Sp. *A. howittii*, sp. n., Cast. *l. c.* p. 101, Geelong.

Eudalia, g. n., Castelnau, *l. c.* p. 102. Allied to *Leptotrachelus*; penultimate joint of tarsi not bilobed. Sp. *Odacantha latipennis* (M'L.); *E. waterhousii*, sp. n., Cast. *l. c.* p. 102, Arnheim's Land.

Zuphiosoma, g. n., Castelnau, *l. c.* p. 103. Allied to *Zuphium*; mentum without a tooth; basal joint of antennæ short. Sp. *Z. fulva*, sp. n., Cast. *l. c.* p. 103, Rockhampton.

Pseudhelluo, g. n., Castelnau, *l. c.* p. 104. (See Table above.) Sp. *P. wilsonii*, sp. n., Cast. *l. c.* p. 105, Brisbane.

Helluodema, g. n., Castelnau, *l. c.* p. 105. (See Table above.) Sp. *Helluomorpha batesii* (J. Thoms.).

Helluosoma, g. n., Castelnau, *l. c.* p. 107. (See Table above.) Known sp. *Ænigma cyanipenne* (Hope). N. sp. *H. ater*, Cast. *l. c.* p. 107, Rockhampton; *H. resplendens*, Cast. *l. c.* p. 108, Port Denison; and *H. cyanea*, Cast. ibid., Rockhampton and Clarence River.

Madecassa, g. n., Fairmaire, Ann. Soc. Ent. Fr. 4e sér. viii. p. 760. Allied to *Glyphodactyla*; palpi slender, especially the last joint, which is very long; labrum large, not emarginate; tarsi not dilated, not furrowed above, joint 4 not emarginate. Sp. *M. coquerelii*, sp. n., Fairmaire, *l. c.* p. 760, Madagascar.

New species:—

Casnonia obscura, Castelnau, Trans. Roy. Soc. Vict. viii. p. 100, Rockhampton; *C. ?clarensii*, Castelnau, ibid., Clarence River.

Ophionœa (sic) *thouzeti*, Castelnau, *l. c.* p. 100, Rockhampton.

Zuphium thouzeti, Castelnau, *l. c.* p. 103, and *Z. rockhamptonensis*, Cast. ibid., Rockhampton; *Z. mastersii*, Cast. ibid., New South Wales.

[1] Known sp. *G. titana* (J. Thoms.), with which *G. grandis* (M'L.) is perhaps identical; also *Helluo longipennis* (Germ.).

Pheropsophus australis, Castelnau, *l. c.* p. 109, Queensland.

Pheropsophus flavicornis, Fairmaire, Ann. Soc. Ent. Fr. 4^e^ sér. viii. p. 759, and *P. bipartitus*, Fairm. ibid., Madagascar.

Ænigma newmanni, Castelnau, *l. c.* p. 108, Sydney; *Æ. splendens*, Cast. *l. c.* p. 109, Port Denison.

Cymindis leachi (Sol. MS.), Reiche, Coleopt. Hefte, iii. p. 2, South Italy; *C. siccelidis*, Reiche, *l. c.* p. 3, Sicily.

Planetes crucifer, Redtenbacher, Reise der Novara, Zool. ii. Col. p. 4, pl. 1. fig. 1, Hongkong.

Brachinus scotomedes, Redtenbacher, *l. c.* p. 5, Hongkong.

Calleida lepida, Redtenbacher, *l. c.* p. 6, pl. 2. fig. 2, Hongkong.

Mochtherus immaculatus, Redtenbacher, *l. c.* p. 7, Java.

Apristus major, L. Miller, Verh. zool.-bot. Ges. in Wien, xviii. p. 6, East Galicia.

Apristus æquatorius, Fairmaire, *l. c.* p. 761, Madagascar.

Thyreopterus. Of this genus Fairmaire (*l. c.*) describes the following new species from Madagascar:—*T. ocularis*, p. 761; *T. rufotinctus*, p. 762; *T. acutispina*, *semiopacus*, and *integer*, p. 763.

Lobodontus fulvipes, Fairmaire, *l. c.* p. 764, Madagascar.

Perigona coquerelii, Fairmaire, *l. c.* p. 766, and *P. suturella*, Fairm. ibid., Madagascar.

Catascopus chaudoiri, Castelnau, *l. c.* p. 110, Clarence River, Australia.

Anthiides:—

Anthia duparqueti (Luc.)=*A. omostigma* (Chaud.), according to Lucas, Bull. Soc. Ent. Fr. 1868, p. xlviii.

Graphipterus valdani (Guér.)=var. *variegatus*, according to Reiche, Col. Hefte, iii. p. 2.

Coxinia semelederi (Chaud.) is described as inhabiting Barbary by Fairmaire, *l. c.* pp. 472, 473.

Anthia duparqueti (Luc.)=*omostigma* (Chaud.): Harold, Col. Hefte, iv. p. 97.

New genera:—

Celanida, g. n., Castelnau, Trans. Roy. Soc. Vict. viii. p. 122. Allied to *Melisodera*; head triangular, narrowed behind into a neck. Sp. *C. montana*, sp. n., Cast. *l. c.* p. 123, Victoria.

Moriomorpha, g. n., Castelnau, *l. c.* p. 123. Allied to *Morio* and *Hyperion* (= *Campylocnemis*); anterior tibiæ curved below, tarsi with joints 1–4 triangular; last joints of palpi rounded at apex; antennæ as long as head and thorax, joint 2 very small, 3 longest. Sp. *M. victoriæ*, sp. n., Cast. *l. c.* p. 124, Dandenong Mountains; *M. adelaidæ*, sp. n., Cast. ibid., Adelaide.

Moriodema, g. n., Castelnau, *l. c.* p. 124. Allied to *Morio*; antennæ increasing towards apex, joint 3 longest; anterior tibiæ arched, strongly emarginate within; tarsi dilated, joints 1–4 triangular. Sp. *M. m'coyei*, sp. n., Cast. *l. c.* p. 125, Melbourne; *M. paramattensis*, sp. n., Cast. ibid., Paramatta.

Veradia, g. n., Castelnau, *l. c.* p. 125. Allied to *Morio*; mentum emarginate, centre of notch convex; labrum not emarginate; last joint of palpi long, conical, pointed; tarsi slender, joint 1 longest, anterior dilated in ♂,

with joint 1 very small and 2-4 broad and triangular. Sp. *V. brisbanensis*, sp. n., Cast. *l. c.* p. 126, Brisbane.

Setalis, g. n., Castelnau, *l. c.* p. 126. Allied to preceding; mentum very short, its wings small; labrum transverse, emarginate; last joints of palpi truncated, scutiform in labials; antennæ with joints 2-4 conical and nearly equal; anterior tibiæ dilated below, with a row of minute spines outside and a narrow fissure within; anterior tarsi with joints 1-4 triangular. Sp. *S. niger*, sp. n., Cast. *l. c.* p. 126, Brisbane and Clarence River.

Siltopia, g. n., Castelnau, *l. c.* p. 127. Allied to *Morio*; neck very short; mentum emarginate, without tooth, its wings elongated and acute; labrum nearly square, strongly emarginate; last joint of palpi subulate; mandibles large, strong, and very pointed; anterior tibiæ straight, strongly emarginate within; elytra shorter than abdomen. Sp. *S. tricolor*, sp. n., Cast. *l. c.* p. 127, Clarence River and Paramatta.

Teraphis, g. n., Castelnau, *l. c.* p. 127. Allied to preceding; mentum deeply emarginate, with a broad rounded tooth; labrum transverse, emarginate; palpi with last joint oval; joint 3 of antennæ conical, longest, remainder increasing in thickness; head narrowed behind eyes; anterior tibiæ straight, strongly emarginate within. N. sp. *T. melbournensis*, Cast. *l. c.* p. 128, Melbourne; *T. argutoroides*, Cast. ibid., New South Wales; and *T. elongata*, Cast. ibid., Victoria.

New species :—

Mystropomus chaudoiri, Castelnau, Trans. Roy. Soc. Vict. viii. p. 120, Clarence River.

Apotomus australis, Castelnau, *l. c.* p. 121, Melbourne; *A. novæ hollandiæ*, Cast. ibid., Rockhampton.

Morio australis, Castelnau, *l. c.* p. 122, New South Wales; *M. novæ-hollandiæ*, Cast. ibid., Brisbane; *M. piceus* and *M. victoriæ*, Cast. ibid., Victoria, Australia.

Morio gracilis, Fairmaire, Ann. Soc. Ent. Fr. 4ᵉ sér. viii. p. 767, Madagascar.

Scaritides.

Eutoma (Newm.). Castelnau (Trans. Roy. Soc. Vict. viii. p. 139) revives this genus, which he regards as distinct from *Carenum*. He refers to it *Carenum violaceum* (M'L.) and probably *C. megacephalum* (Westw.).

Gnathoxys blissii (M'L.) = *granularis* (Westw.) and *G. granularis* (Lac.) probably = *obscurus* (Reiche). Castelnau, *l. c.* p. 145.

Neocarenum, g. n., Castelnau, Trans. Roy. Soc. Vict. viii. p. 138. Allied to *Carenum*; elongated; labrum denticulated; terminal joints of palpi long and narrow. N. sp. *N. singularis*, Cast. *l. c.* p. 139, Swan River; *N. kreusleri*, Cast. ibid., South Australia.

New species :—

Eutoma. Castelnau (Trans. Roy. Soc. Vict. viii.) describes the following new Australian species of this genus:—*E. episcopalis*, p. 140, Central Australia; *E. newmanni*, ibid., Port Denison; *E. filiforme*, ibid., Darling River; *E. purpurata*, p. 141, Adelaide; *E. lævis*, ibid., New South Wales; *E. loddonensis*, p. 142, Loddon River.

Scarites (*Crepidopterus*) *coquerelii*, Fairmaire, Ann. Soc. Ent. Fr. 4ᵉ sér.

viii. p. 754, Nossi-Bé; *S. dohrnii*, Fairm. ibid., and *S.* (*Tæniolobus*) *convexipennis*, Fairm. *l. c.* p. 755, Madagascar.

Scarites. Castelnau (*l. c.*) describes the following new Australian species of this genus:—*S. substriatus*, p. 143, Darling River; *S. plicatulus*, ibid., Escape Cliff; *S. mitchellii*, ibid., Darling River; *S. bostockii*, p. 144, North-west Australia; *S. ruficornis*, ibid., South Australia; *S. bipunctatus*, ibid., Rockhampton.

Eudema alternans, Castelnau, *l. c.* p. 146, and *E. rockhamptonensis*, Cast. ibid., Rockhampton; *E. elongata*, Castelnau, ibid., Sydney; *E. azurea*, Castelnau, *l. c.* p. 147, Rockhampton.

Scaraphites. Castelnau (*l. c.*) describes the following new Australian species of this genus:—*S. heros*, p. 129, West Australia; *S. howittii*, p. 130, South Australia; *S. affinis*, ibid., Cooper's Creek; *S. carbonarius*, ibid., Cooper's Creek; *S. hopei*, p. 131, Central Australia; *S. humeralis*, ibid., Swan River; *S. gigas*, p. 132, North-west Australia; *S. martinii*, p. 133, Champion Bay.

Carenum. Castelnau (*l. c.*) describes the following new Australian species of this genus:—*C. brisbanense*, p. 133, Brisbane; *C. ebeninum*, p. 134, South Australia; *C. carbonarium*, ibid., West Australia; *C. superbum*, p. 135, Lachlan; *C. amabile*, p. 135, Lachlan; *C. multiimpressum*, ibid., Swan River; *C. westwoodii*, p. 136, Mount Kosciusko; *C. splendens*, ibid., Port Denison; *C. odewahnii*, p. 137, South Australia; *C. schomburgkii*, ibid., South Australia; *C. devastator*, ibid., Swan River.

Ditomus (*Odontocarus*) *libanicola*, Marseul, L'Abeille, v. p. 171, Syria.

Chlæniides.

Stomatocœlus licinoides (M'L.) = *Dicrochile* (*Rembus*) *goryi* (Boisd.) according to Castelnau, Trans. Roy. Soc. Vict. viii. p. 152.

Pedalopia, g. n., Castelnau, *l. c.* p. 154. Allied to *Rembus* and *Badister*; labrum transverse, not emarginate; joint 1 of tarsi as long as 2+3. Sp. *P. novæ zelandiæ*, sp. n., Cast. *l. c.* p. 154.

Oodinus, g. n., Fairmaire, Ann. Soc. Ent. Fr. 4e sér. viii. p. 757. Allied to *Oodes*; smooth; prothorax slightly covering the base of the elytra; tooth of mentum simple, broad, truncate; last joint of palpi elongate; joint 3 of antennæ longer than 4; prosternum broad, truncate; anterior coxæ globular, very prominent. Sp. *O. chaudoiri*, sp. n., Fairm. *l. c.* p. 757, Madagascar.

New species :—

Chlænius pericollis, Fairmaire, Ann. Soc. Ent. Fr. 4e sér. viii. p. 756, Madagascar; and *C. coquerelii*, Fairm. ibid., Nossi-Bé.

Chlœnius (sic) *maculifer*, Castelnau, Trans. Roy. Soc. Vict. viii. p. 148, Eastern Australia; *C. darlingensis*, Castelnau, ibid., Darling River, Australia; *C. maculiger*, Castelnau, ibid., Rockhampton.

Chlœnius hügelii, Redtenbacher, Reise der Novara, Zool. ii. Col. p. 9, pl. 1. fig. 3, Calcutta; *C. pericallus*, Redt. *l. c.* p. 10, pl. 1. fig. 4 (*C. pulcher*), Hong Kong.

Rembus zelandicus, Redtenbacher, *l. c.* p. 10, pl. 1. fig. 5, Auckland.

Hoplolenus agaboides, Fairmaire, *l. c.* p. 758, Madagascar.

Oodes. Castelnau (*l. c.*) describes the following new Australian species of this genus:—*O. modestus*, p. 149, Melbourne; *O. waterhousii*, ibid., Arnheim's Land; *O. oblongus*, ibid., New South Wales; *O. paroensis*, p. 150,

Central Australia; *O. denisonensis*, ibid., Port Denison; *O. interioris*, ibid., Cooper's Creek; *O. latus*, ibid., Swan River; *O. trisulcatus*, ibid., Port Denison; *O. proximus*, p. 151, Central Australia; *O. inornatus*, ibid., Swan River; *O. convexus*, ibid., Victoria and Swan River; *O. bostockii*, ibid., Western Australia; and *O. thoracicus*, ibid., Swan River.

Physolæstus suturalis, Castelnau, *l. c.* p. 152, Paroo River, Central Australia.

Stomides.

Castelnau (Trans. Roy. Soc. Vict. viii. p. 159) remarks upon the distribution of the numerous Australian species of *Cnemacanthidæ*, which in that region, as elsewhere, are almost confined to the more southern parts. *Oopterus* (Guér.) belongs, according to the author, to the *Bembidiides*. The author refers to *Mecodema* (Blanch.), *Broscus æneus* (White), and probably also *Promecoderus lottinii* (Brullé). No *Promecoderus* has yet been found, according to him, in New Zealand. Of the Australian species of this genus Castelnau gives a tabular synopsis (*l. c.* p. 172).

Burmeister states (Stett. ent. Zeit. 1868, p. 226) that the genera *Baripus* (Dej.) and *Cardiophthalmus* (Curt.) must be united, they having precisely the same characters, even to the emargination of the eyes by a projecting lobe of the head, which is regarded by Lacordaire as specially characteristic of *Cardiophthalmus*. The anterior tarsi in the latter are formed precisely as in *Baripus*; joints 1–4 decrease perceptibly in size and are nearly of the same size in both sexes. The species of *Baripus* (or, as Burmeister writes, *Barypus*) have the elytra not distinctly and deeply striated. The known species cited by Burmeister are—*speciosus* (Kl.), *rivalis* (Germ.), *aterrimus* (Chaud.), and *bonvouloirii* (Chaud.); the species of *Cardiophthalmus* have more deeply striated elytra, and are—*longitarsis* (Wat.), *clivinoides* (Curt.), and a new species.

Burmeister (*l. c.* p. 228) revives the name of *Odontoscelis* (Curt.) for the genus *Cnemacanthus* (Brullé), but without giving his reason for so doing. He divides the genus into two sections, according as the elytra are or are not striated, and enumerates the species known to him.

Cnemacanthus desmarestii (Guér.). Redtenbacher (Reise der Novara, Zool. ii. Col. p. 12) notices a variety of this species.

Broscides. Putzeys publishes (Stett. ent. Zeit. 1868, pp. 305–379) a monographic revision of this group, in which he admits the following genera (Table, *l. c.* pp. 306, 307) :—

I. Anterior tibiæ dilated and produced at extremity.
  A. Point of prosternum furnished with hairs.
    * Anterior tibiæ toothed at the middle of their outer margin. 17. Gnathoxys (Westw.).
    † Anterior tibiæ not toothed ..... 16. Cnemalobus (Guér.).
  B. Point of prosternum smooth.
    * Penultimate joint of labial palpi as long as the last joint. 2. Craspedonotus (Schaum).
    † Penultimate joint of labial palpi shorter than the last joint.
      a. Antennæ smooth ..... 4. Metaglymma (Bates).
      b. Antennæ pubescent.

1. Antennæ short, nearly moniliform,
3. Mecodema (Blanch.).
2. Antennæ long, filiform .... 10. Adotela (Cast.).

II. Anterior tibiæ not produced.

A. Point of prosternum furnished with hairs.
15. Baripus (Dej.).

B. Point of prosternum smooth.

* Last joint of palpi emarginate beneath.
14. Miscodera (Esch.).

† Last joint of palpi not emarginate beneath.

a. Tarsi in ♂ spongiose beneath.

1. Temporal suture indistinct.. 13. Broscosoma (Putz.).
2. Temporal suture very complete.
a. A prescutellar stria..... 1. Broscus (Panz.).
β. No prescutellar stria.
a. Elytra a little widened beyond the middle.
12. Cascelius (Curt.).
b. Elytra simply oval or oblong.
8. Promecoderus (Dej.).

b. Tarsi in ♂ not spongiose.

1. Mentum without a tooth .. 11. Parroa (Cast.).
2. Mentum toothed.
a. Temporal suture complete 9. Anheterus, g. n.
β. Temporal suture not distinct.
a. A prescutellar stria.... 7. Oregus, g. n.
b. No prescutellar stria.
** Antennæ filiform .. 5. Percosoma (Schaum).
†† Antennæ moniliform 6. Lychnus, g. n.

The species referred to the known genera and their synonyms are as follows:—1. Broscus=*Cephalotes* (Bon.): sp. *nobilis* (Dej.)=*rufipes* (Guér.), *punctatus* (Dej.), *cephalotes* (Lin.), of which *semistriatus* (Bess.) may be a variety, *karelini* (Zoubk.)=*cordicollis* (Chaud.), *lævigatus* (Dej.), *politus* (Dej.), *insularis* (Pioch.), *glaber* (Brullé), *rutilans* (Woll.), *crassimargo* (Woll.), *basalis* (Newm.), and one new species. 2. Craspedonotus *tibialis* (Schaum). 3. Mecodema *sculpturatum* (Blanch.), *rectolineatum* (Cast.), and five other species described by Castelnau (*vide infrà*). *Brullea antarctica* (Cast.) is noticed by Putzeys, who does not pronounce upon its generic distinctness. 4. Metaglymma=*Maoria* (Cast.): sp. *tibialis* (Cast.), *monilifer* (Bates), three others described by Castelnau, and one new species. 5. Percosoma *carenoide* (White)=*M. percoide* (Cast.), *blagravii* (Cast.). 8. Promecoderus forms three groups, one having for its type *P. brunnicornis* (Dej.), another *Cnemacanthus gibbosus* (Gray), whilst the third, which is intermediate between these, represents the genus *Cerotalis* (Cast.): sp. group i. *brunnicornis* (Dej.), *degener* (Dej.), and one new species; group ii. (*Cerotalis*) *substriatus* (Cast.), *semiviolaceus* (Cast.), and one new species; group iii. *gibbosus* (Gray), *concolor* (Germ.), *suturalis* (Cast.), *clivinoides* (Guér.)= ? *lottini* (Brullé), *dyschiroides* (Guér.), *albanicnsis* (Cast.), *subdepressus* (Guér.), and two new species; also 16 species described by Castelnau. 10. Adotela *concolor* and *esmeralda* (Cast.). 11. Parroa *grandis* (Cast.), and *violacea*, *carbonaria*, *howitti*, and *bicolor* (Cast.). 12. Cascelius=*Cre-*

obius (Guér.): sp. *eydouxii* (Guér.)=*kingii* (Curt.), *æneo-niger* (Wat.)=*niger* (Blanch.), *gravesii* (Curt.). 13. Broscosoma *baldense* (Putz.). 14. Miscodera = *Leiochiton* (Curt.): sp. *arctica* (Payk.), *erythropus* (Motsch.)=? *arctica*, *americana* (Mann.), *insignis* (Mann.), *hardyi* (Chaud.). 15. Baripus, divided into three sections:—*Baripus*, with *rivalis* (Germ.); *Cardiophthalmus* (Curt.), with *speciosus* (Dej.) and *clivinoides* (Curt.)=*Tetraodes lævis* (Blanch.); and *Arathymus* (Guér.), *parallelus* (Guér.)=*subsulcatus* (Sol.), and *bonvouloiri* (Chaud.). 16. Cnemalobus=*Cnemacanthus* (Brullé, Lac.)=*Odontoscelis* (Curt.)=*Scelodontis* (Curt.)=*Scaritidea* (Wat.), divided into four sections:—i. *sulcatus* (Chaud.), and one new species; ii. *cærulescens* (Chaud.), *obscurus* (Brullé)=*tentyrioides* (Curt.)=*aterrimus* (Chaud.), *cyaneus* (Brullé), and three new species; iii. *desmarestii* (Guér.); iv. *striatus* (Wat.); *darwinii*, *curtisii*, and *substriatus* (Wat.) are unknown to the author. 17. Gnathoxys, divided into two sections:—i. *granularis* (Westw.)=*blissii* (M'L.), *irregularis* (Westw.), *obscurus* (Reiche), *insignitus* (M'L.); ii. *cicatricosus* (Reiche), and two new species; also described by M'Leay, but unknown to the author, *G. humeralis*, *barbatus*, *submetallicus*, and *tessellatus*.

New genera:—

*Lychnus**, g. n., Putzeys, *l. c.* p. 325. (See Table, p. 211.) Sp. *L. ater*, sp. n., Putz. *l. c.* p. 325, Van Diemen's Land (=? *Mecodema montanum*, Cast.).

Oregus, g. n., Putzeys, *l. c.* p. 326. (See Table, p. 211.) *Promecoderus*? *æneus* (White).

Anheterus, g. n., Putzeys, *l. c.* p. 345. (See Table, p. 211.) Sp. *Promecod. gracilis* (Germ.).

Meonis, g. n., Castelnau, *l. c.* p. 155. Allied to *Stomis*; terminal joint of palpi long, triangular, obliquely truncated; emargination of mentum convex but not toothed; joints of antennæ elongated. Sp. *M. ater* and *niger*, sp. n., Cast. *l. c.* p. 156, Clarence River.

Adetipa, g. n., Castelnau, *l. c.* p. 156. Allied to preceding; mandibles less prominent; emargination of mentum unarmed; terminal joint of palpi long, narrow, and almost cylindrical. Sp. *A. punctata*, sp. n., Cast. *l. c.* p. 157, Clarence River.

Darodilia, g. n., Castelnau, *l. c.* p. 157. Allied to preceding; facies of *Omaseus*; mandibles prominent as in *Stomis*; terminal joint of palpi long, rather oval, truncated at apex; mentum with a central tooth. Sp. *D. mandibularis*, sp. n., Cast. *l. c.* p. 157, Lachlan River.

Leiradira, g. n., Castelnau, *l. c.* p. 158. Intermediate between *Stomis* and *Cnemacanthus*; mentum not toothed; joint 1 of antennæ longer than 2–4 together; antennæ bent at apex. Sp. *L. latreillei*, sp. n., Cast. *l. c.* p. 158, Queensland; *L. auricollis*, sp. n., Cast. *l. c.* p. 159, New South Wales and Queensland.

Maoria, g. n., Castelnau, *l. c.* p. 163. Allied to *Mecodema*; terminal joint of palpi oval, not securiform; tooth of mentum simple; anterior tibiæ with two very long spurs on the inside. Sp. n. *M. tibialis*, Cast. *l. c.* p. 163, *M. punctata*, *morio*, *clivinoides*, and *dyschirioides*, Cast. *l. c.* p. 164, New Zealand.

Brullea, g. n., Castelnau, *l. c.* p. 165. Allied to preceding and to *Glyptus*

* Name preoccupied for a genus of Helicidæ.

(Brullé); labrum not emarginate; tibiæ strongly curved, especially the posterior. Sp. *B. antarctica*, sp. n., Cast. *l. c.* p. 166, New Zealand.

Parroa, g. n., Castelnau, *l. c.* p. 173. Allied to *Promecoderus*; emargination of mentum unarmed, terminal joints of palpi oval. Sp. n. *P. howittii*, Cast. *l. c.* p. 173, and *P. bicolor*, Cast. *l. c.* p. 174, Paroo River; *P. grandis*, *violacea*, and *carbonaria*, Cast. *l. c.* p. 174, Swan River.

Adotela, g. n., Castelnau, *l. c.* p. 174. Allied to *Parroa*; terminal joints of palpi strongly securiform; joints 1–3 of anterior tarsi with small, spongiose brushes. Sp. *A. concolor* and *esmeralda*, sp. n., Cast. *l. c.* p. 175, Swan River.

Cerotalis, g. n., Castelnau, *l. c.* p. 175. Allied to *Promecoderus*; mentum without a tooth; terminal joints of palpi oval and subtruncated; joints 1–4 of anterior tarsi with spongy cushions. Sp. *P. degener* (Guér.). N. sp. *C. semiviolacea*, Cast. *l. c.* p. 175, South Australia; *C. substriata*, Cast. ibid., King George's Sound; and *C. versicolor*, Cast. ibid., Victoria.

New species:—

Cnemalobus pampeusis, Putzeys, Stett. ent. Zeit. 1868, p. 364, Chili; *C. germaini*, Putz. *l. c.* p. 365, Chili; *C. gayi*, Putz. *l. c.* p. 366, Chili; *C. abbreviatus*, Putz. ibid., Chili.

Mecodema crenaticollis, Redtenbacher, Reise der Novara, Zool. ii. Col. p. 11, pl. 1. fig. 6, New Zealand.

Mecodema. Castelnau (Trans. Roy. Soc. Vict. viii.) describes the following new species of this genus:—*M. howitii*, p. 159, New Zealand; *M. rectolineatum*, p. 160, Dunedin, New Zealand; *M. lucidum*, ibid., New Zealand; *M. crenicolle*, ibid., Auckland, New Zealand; *M. simplex*, ibid., Auckland; *M. blagravii*, p. 161, Victoria; *M. impressum*, ibid., Dunedin, New Zealand; *M. alternans*, ibid., Otago, New Zealand; *M. inæquale*, p. 162, New Zealand; *M. elongatum*, ibid., New Zealand; *M. percoides*, p. 163, Tasmania; *M. montanum*, ibid., Victoria.

Broscus illustris, Putzeys, *l. c.* p. 311, Syria.

Metaglymma aberrans, Putzeys, *l. c.* p. 320, New Zealand.

Promecoderus morosus, Putzeys, *l. c.* p. 333, Australia; *P. majusculus*, Putz. *l. c.* p. 333 (perhaps = *versicolor*, Cast.), North Australia; *P. lucidus*, Putz. *l. c.* p. 339, Melbourne; *P. puella*, Putz. *l. c.* p. 343, New South Wales.

Promecoderus. Castelnau (*l. c.*) describes the following new species:—*P. tasmanicus*, p. 166, Tasmania; *P. bassii*, ibid., King's Island; *P. pygmæus*, p. 167, Victoria; *P. minutus*, ibid., Swan River; *P. nigricornis*, ibid., Victoria; *P. maritimus*, ibid., Victoria; *P. striato-punctatus*, p. 168, Victoria; *P. semistriatus*, ibid., New South Wales; *P. albaniensis*, ibid., King George's Sound; *P. scauroides*, p. 169, Swan River; *P. elegans*, ibid., Melbourne; *P. oblongus*, ibid., Melbourne; *P. modestus*, p. 170, Tasmania; *P. neglectus*, ibid., Victoria; *P. wilcoxii*, ibid., Clarence River; *P. lucidicollis*, ibid., Melbourne; *P. suturalis*, ibid., Adelaide; *P. howittii*, p. 171, Melbourne.

Barypus pulchellus, Burm. Stett. ent. Zeit. 1868, p. 225, note, and p. 227, Buenos Ayres.

Harpalides:—

Chaudoir states that *Anisodactylus nigrita* (Dej.) = *melanopus* (Hald. & Lec.), and proposes the name of *A. lecontei* for Leconte's *A. nigrita* (Rev. Mag. Zool. 1868, p. 161). According to him also (*l. c.* p. 162) *A. crassus*

(Lec.) is distinct from *A. rusticus*, which he describes (*l. c.* p. 163), and he refers *A. gravidus* and *pinguis* (Lec.) to *A. crassus*. Chaudoir states (*l. c.* p. 164) that *Agonoderus pallipes* (Lec.) is not *A. pallipes* (Dej.), which = *A. dorsalis* (Lec.). For Leconte's *A. pallipes* he proposes the name of *A. lecontei*. Chaudoir (*l. c.* p. 165) refers to *Agonoderus*, *Trechus partiarius* (Say), *Acupalpus pauperculus* (Dej.) = *consimilis* (Dej.), *A. testaceus*, and *A. indistinctus* (Dej.). He characterizes the first and last of these species. *Bradycellus conflagratus* (Mann.) = *cognatus* (Gyll.), from which *longiusculus* (Mann.) is distinct, and of which *B. nitens* (Lec.) is probably a variety (*l. c.* p. 166). *B. longiusculus* = *ruficrus* (Kirby). *Acupalpus tantillus*, *difficilis*, and *micros* (Dej.) belong to one species, and are referred by Chaudoir to *Bradycellus* (*l. c.* p. 167). Chaudoir (*l. c.* p. 167) refers the following species to *Tachycellus* (Moraw.), which genus he adopts:—*Harpalus dichrous* and *nigrinus* (Dej.), *H. vulpecula* (Say) = *nigripennis* (Dej.), *H. autumnalis* (Say), *Stenol. badiipennis* (Hald.), *Geobœnus ruficrus* (Lec.), *Brad. nebulosus* (Lec.), *Feronia atrimedia* (Say), and *Trechus tibialis* (Kirby) = *Geob. quadricollis* (Lec.), which is probably identical with *nigrinus* (Dej.). *Harp. longicollis* (Lec.) = *longior* (Kirby), according to Chaudoir (*l. c.* p. 170).

Reiche (Col. Hefte, iii. p. 2) indicates the following synonymy of species of *Harpalus*:—*H. grandicollis* (Reiche) = var. *caspius* (Stev.); *H. reichei* (Desh.) = var. *griseus* (Panz.); *H. bellieri* (Reiche) = *sardeus* (Dahl.); *H. subcylindricus* (Reiche) changed to *palangoides* on account of *subcylindricus* (Dej.).

Harpalus elegans (Prell.). Kraatz (Berl. ent. Zeitschr, 1868, p. 287) regards this form as belonging to *H. æneus*.

New genera:—

Teropha, g. n., Castelnau, Trans. Roy. Soc. Vict. viii. p. 176 (*Cratocerides*). Mentum broad, emarginate, with a strong bifid tooth; labrum transverse; mandibles very long, strong, inflexed downwards; max. palpi long, joint 1 short, 2 longest, 4 rather inflexed, and rounded at apex; labial palpi with joint 1 very small, 2 very long; antennæ short, tapering, joints 2 and 4 equal; head very large; prothorax large, its sides nearly straight, broader in front, posterior angles acute; legs stout; posterior trochanters long, narrowed behind, curved and pointed at apex; tarsi not dilated in ♂. Sp. *Platysma flindersii* (White) of which *P. sturtii* (White) is a variety.

Nebriosoma, g. n., Castelnau, *l. c.* p. 179. Allied to *Loxomerus*; mentum without a tooth; palpi long, joints 1 and 3 short, 2 and 4 long, 4 truncate. Sp. *N. fallax*, sp. n., Cast. *l. c.* p. 179, New South Wales.

Scatophus, g. n., Castelnau, *l. c.* p. 180. Allied to *Acinopus*; labrum transverse, not emarginate; palpi stouter and more broadly truncated at apex. Sp. *Acinopus australis* (Hope); *S. hopei*, sp. n., Cast. *l. c.* p. 180, Adelaide.

Sagræmerus, g. n., Redtenbacher, Reise der Novara, Zool. ii. Col. p. 13. Allied to *Trichopselaphus*, but the palpi filiform, with the apex subacute, and the mentum with a distinct tooth. Sp. *S. javanus*, sp. n., Redt. *l. c.* p. 14, pl. 1. fig. 7, Java.

New species:—

Amblygnathus minutus, Castelnau, *l. c.* p. 179, King George's Sound.

Orthogonius xanthomerus, Redtenbacher, Reise der Novara, Zool. ii. Col. p. 12, Hongkong.

Cratognathus flavilabris, Fairmaire, Ann. Soc. Ent. Fr. 4e sér. viii. p. 772, Madagascar.

Bradybænus (?) *ornatus*, Redtenbacher, *l. c.* p. 14, pl. 1. fig. 8, Ceylon.

Bradycellus cordicollis, Fairmaire, *l. c.* p. 476, Constantine.

Bradycellus parallelus, Chaudoir, Rev. et Mag. de Zool. 1868, p. 166, Louisiana; *B. subcordatus*, Chaudoir, ibid., United States.

Acupalpus rectangulus, Chaudoir, *l. c.* p. 167, North America.

Ophonus dermatodes, Fairmaire, *l. c.* p. 474, Morocco; *O. carteroides*, Fairm. *l. c.* p. 475, Constantine.

Harpalus oodioides, Chaudoir, *l. c.* p. 168, Rupert's Land; *H. occidentalis*, Chaudoir, ibid., Vancouver's Island; *H. liobasis*, Chaudoir, *l. c.* p. 170, West Coast of North America.

Harpalus. Castelnau (Trans. Roy. Soc. Vict. viii.) describes the following new Australian species of this genus:—*H. interioris*, p. 181, Paroo River; *H. waterhousii*, p. 182, Adelaide; *H. thouzeti*, ibid., Rockhampton; *H. rotundicollis*, ibid., Australia generally; *H. denisonensis*, p. 183, Port Denison; *H. patrueloides*, ibid., New South Wales and Victoria; *H. melbournensis*, ibid., Melbourne; *H. oblongiusculus* (sic), ibid., and *H. punctiferus*, p. 184, Brisbane; *H. paroensis*, ibid., Paroo River; *H. rugosipennis*, ibid., Melbourne; *H. sculptipennis*, p. 185, King George's Sound; *H. sculpturalis* and *H. inæqualipennis*, ibid., King George's Sound and Swan River; *H. alternans*, ibid., Brisbane; *H. montanus*, p. 186, Queensland; *H. impressipennis*, ibid., Rockhampton; *H. rana*, ibid., Melbourne; *H. wilcoxii*, p. 187, Brisbane &c.; *H. edwardsii*, ibid., Melbourne; *H. vandiemensis*, ibid., Tasmania; *H. planoimpressus*, ibid., Brisbane; *H. peronii*, p. 188, King George's Sound; *H. flindersii*, ibid., Rockhampton; *H. quadraticollis*, ibid., Sydney and Brisbane; *H. marginicollis*, p. 189, *H. velox*, ibid., and *H. yarræ*, ibid., Melbourne; *H. kreftii*, p. 190, Port Denison; *H. germari*, ibid., *H. erichsoni*, p. 191, and *H. ramula*, ibid., Melbourne; *H. tasmanicus*, ibid., Tasmania; *H. amaroides*, p. 192, Brisbane; *H. infelix*, ibid., Rockhampton; *H. lapeyrousii*, ibid., Sydney; *H. coxii*, p. 193, Clarence River; *H. kingii*, ibid., King George's Sound; *H. antarcticus*, ibid., Dunedin, New Zealand; *H. novæ zelandiæ*, p. 194, New Zealand; *H. illawarensis*, ibid., Illawarra; *H. adelaidæ*, ibid., Adelaide &c.; *H. brunneus*, p. 195, Adelaide and Swan River; *H. dampierii*, ibid., Swan River and South Australia; *H. fortnumi*, ibid., Adelaide; *H. boisduvalii*, p. 196, *H. bostockii*, ibid., and *H. versicolor*, ibid., Swan River; *H. deyrolii*, ibid., South Australia; *H. femoralis*, p. 197, Rockhampton; *H. mandibularis*, ibid., Port Denison; *H. dingo*, ibid., Rockhampton; *H. novæ hollandiæ*, ibid., Melbourne.

Anisodactylus puncticollis, Chaudoir, *l. c.* p. 161, Vancouver's Island; *A.* (*Gynandrotarsus*) *elongatus*, Chaudoir, *l. c.* p. 163, Texas.

Anisodactylus strenuus, Horn, Trans. Amer. Ent. Soc. ii. p. 130, California.

Diachromus exquisitus, Mulsant & Rey, Ann. Soc. Linn. Lyon, n. s. xv. p. 403, Levant.

Forticosomus. Of this genus Castelnau (Trans. Roy. Soc. Vict. viii.) describes the following new Australian species:—*F. grandis*, p. 177, New South Wales; *F. rotundipennis*, ibid., *F. lateralis* and *minutus*, p. 178, Central Australia; *F. edelii*, ibid., and *F. maytsii*, ibid., West Australia.

Stenolophus iridicolor, Redtenbacher, *l. c.* p. 16, Hongkong.

Stenolophus. Fairmaire describes the following new species of this genus:—*S. iridescens, irinorufus, irinoviridis, dorsiger, humeralis*, and *trivittis*, *l. c.* p. 773, from Madagascar; and *S. agyzimbanus*, *l. c.* p. 774, Zanzibar.

Feroniides:—

Chaudoir publishes (L'Abeille, v. pp. 219–260) an elaborate memoir upon the *Feroniæ* of Europe and the basin of the Mediterranean, including the description of many new species. In the great genus Feronia he proposes to apply Motschulsky's name *Pedius* to a group characterized by having a well-marked furrow along the anterior margin and sides of each abdominal segment, long antennæ, and the lower surface strongly punctured. It includes:—

Pœcilus bœticus (Ramb.), *crenipennis* (Duv.), *decipiens* (Waltl), *coarctatus* (Luc.)=*gratus* (Chaud.), *cupripennis* (Fairm.), *inquinatus* (Sturm)=*lævissimus* (Chaud.), *inæqualis* (Marsh.)=*negligens* (Dej.), *F. sicula* (Levr.) and *inepta* (Coq.).

Under the subgenus *Pœcilus*, Chaudoir maintains that *versicolor* (Steph.) is distinct from *cuprea*, but is inclined to think that the former is the insect meant by Linnæus under the latter name (*l. c.* p. 220).

Of *Pterostichus* Chaudoir gives a revision of the species (*l. c.* pp. 223–232), which he divides into several groups as follows:—

1. *Feronia maura* and allies: sp. *F. escheri* (Heer), *F. validiuscula* (Chaud.)=*maurus* (Heer)=*biseriatus* (Schaum)=*ywani* (Schaum), *F. planiuscula* (Chaud.)=?*peirolerii* (Heer), and three new species.

2. *Feronia ywani* and allies: sp. *F. ywani* (Dej.); also *F. jurinei, bicolor, xatarti* (=*dubia*, Heer), *spinolæ* (=*flavofemorata*, Bon.), *multipunctata, externe-punctata, pinguis, flavo-femorata* (Dej.), and *cribrata.*

3. *Feronia parumpunctata* and allies: sp. *F. platyptera* (Fairm. et Laboulb.), *impressicollis* (Fairm.), *italica* (Chaud.), and *cantabrica* (Schauf.) altered to *cantabra* by Chaudoir, *lasserrei* (Fairm.), *micans* (Heer), and two new species.

Under *Tapinopterus*, Chaudoir refers to *F. duponchelii* (Dej.), *filigrana* (Mill.), *extensa* (Dej.), and two new species, and under *Percus* to *F. cylindrica* (Sturm). Under *Haptoderus* he includes *F. cognata* (Dej.) = *placidus* (Rosenh.), *amœna* (Dej.), *glacialis* (Bris.), *stomoides* (Motsch.), and several new species. *Molops*, although placed as if a section of *Feronia*, is treated by Chaudoir as if a distinct genus; the numbers of the species are continuous, but the initial of *Molops* is used with them. The species referred to by Chaudoir are:—*M. striolatus, robustus, dalmatinus, cottellii* (Duft.)=*alpestris* (Dej.), *elatus, rufipes, terricola, ovipennis* (Chaud.)=*cottellii* (Schaum), *longipennis, bucephalus, spartanus, edurus, corpulentus, senilis, marginepunctatus*, and (*Stenochoromus*) *montenegrinus* (Mill.).

Feronia. Chaudoir remarks as follows upon some North-American species of this genus (Rev. et Mag. Zool. 1868):—*F. unicolor* (Lec.) is not *unicolor* (Dej.), which probably=*ovipennis* (Lec.), *l. c.* p. 334; *F. rostrata* (Newm.) and *grandiceps* (Lec.), as also *F. spinicollis* (Dej.), belong in the neighbourhood of *Hypherpes* (*l. c.* pp. 336–337); *Omaseus rufiscapus* (Mann.) is a *Cryo-*

bius nearly allied to *F. vindicata* (*l. c.* p. 341); *Cryobius ruficollis* (Mann.) is an immature form allied to *F. empetricola* (ibid.); *C. fastidiosus* (Mann.), characters indicated (ibid.).

Calathus. Harold remarks upon the nomenclature of the species of this genus (Col. Hefte, iii. pp. 90–93). The most important note is, that as the genus *Pristodactyla* is now by general consent united with *Calathus*, we get two species with the name of *advena* and two with that of *mollis*. For *Calathus* (*Prist.*) *advena* (Woll.), Harold proposes the name of *canariensis*. *C.* (*Prist.*) *mollis* (Esch.)=*dulcis* (Mann.), and the later name will stand.

Trechus. Pandellé has published (Mat. pour la Faune des Col. de France, pp. 131–161) a monographic revision of the European species of this genus. It is arranged throughout in a tabular form, and contains the characters of 56 species known to the author. Ten species, with which he is unacquainted, are described in a sort of appendix. The genera *Blemus* (Redt.), *Thalassophilus* (Woll.), and *Epaphius* (Leach) are rejected by the author.

Zabrus validus (Schaum)=var. *græcus*, *Z. helopioides* (Reiche) is distinct from *damascenus*, and *Patrobus napoleonis* (Reiche) is distinct from *excavatus*, according to Reiche, Col. Hefte, iii. p. 2.

Pangus caliginosus (Fab.) is figured in the American Naturalist (ii. p. 111, fig. 8), and also a larva considered to belong either to this species or to a species of *Harpalus* (ibid. fig. 10).

Agonum cupripenne (Say) is figured in Amer. Natural. ii. p. 111, fig. 9.

Rye publishes a short character of *Patrobus napoleonis* (Reiche). Ent. M. Mag. iv. p. 232.

Anophthalmus. Horn (Trans. Amer. Ent. Soc. ii. p. 126) tabulates the North-American species of this genus. *A. angulatus* (Lec.)=*menetriesii* (Motsch.).

Reiche's assertion as to the distinctness of *Patrobus napoleonis* and *P. excavatus* is refuted by Kiesenwetter (Col. Hefte, iv. p. 92) and Kraatz (ibid. p. 95).

New genera:—

Zeodera, g. n., Castelnau, Trans. Roy. Soc. Vict. viii. p. 200. Allied to *Microcephalus*; apical joint of max. palpi rounded externally, broadly truncated; not securiform. Sp. *Z. ater*, sp. n., Cast. *l. c.* p. 200, Clarence River.

Cerabilia, g. n., Castelnau, *l. c.* p. 202. Allied to *Microcephalus*; palpi with their last joint oval, fusiform, pointed at apex. Sp. *C. maori*, sp. n., Cast. *l. c.* p. 202, Dunedin (New Zealand).

Tibarisus, g. n., Castelnau, *l. c.* p. 202. Allied to preceding; mentum emarginate, with its central part advanced and rounded; max. palpi with joint 1 very small, 2 very long, curved, 3 rather shorter, slender, 4 suboval, truncated at apex; labial palpi with joint 2 very long, 3 truncated, joint 3 of antennæ longest. Sp. *T. melas*, sp. n., Cast. *l. c.* p. 203, Queensland and New South Wales.

New species:—

Drimostoma chaudoirii (Coq. MS.), Fairmaire, Ann. Soc. Ent. Fr. 4e sér. viii. p. 768, and *D. klugii* (Coq. MS.), Fairmaire, *l. c.* p. 769, Madagascar.

Drimostoma. Castelnau (Trans. Roy. Soc. Vict. viii.) describes the following new species of this genus:—*D. australis*, p. 198, Victoria; *D. mon-*

tana, ibid., Victoria; *D. thouzeti*, ibid., Rockhampton; *D. vicina*, p. 199, Rockhampton; *D. alpestris*, ibid., Victoria; *D. antarctica*, ibid., New Zealand; *D. striato-punctata*, ibid., New Zealand; *D.? tasmanica*, ibid., Tasmania.

Abacetus. Fairmaire (*l. c.*) describes the following new species:—*A. percoides*, p. 769, Madagascar, Zanzibar; *A. elongatus*, p. 770, Zanzibar; *A. iridipennis*, p. 770, Comores; and *A. viridulus*, p. 771, Madagascar.

Feroma (*Steropus*) *ochracea*, Gautier des Cottes, Mitth. schw. ent. Gesellsch. ii. p. 324, Taurus; *F.* (*Abax*) *stierlini*, Gaut. des Cottes, *l. c.* p. 325, Caucasus.

Feronia. Chaudoir describes (L'Abeille, v.) the following new species of this genus belonging to the European and Mediterranean fauna:—(Pœcilus) *F. anodon*, *l. c.* p. 220, from beyond the Caucasus; *F. æneola*, *l. c.* p. 221: (Lagarus) *F. cryobioides*, *l. c.* p. 222, Syria: (Steropus) *F. tenuimarginata*, *l. c.* p. 222, Transylvania: (Pterostichus) *F. baudii*, *l. c.* p. 225, Maritime Alps; *F. parallelipennis*, *l. c.* p. 226, Jura and Alps; *F. parnassia*, *l. c.* p. 227, Piedmont; *F. picipes*, *l. c.* p. 228, Apennines; *F. cantalica*, *l. c.* p. 230, Cantal.

Chaudoir also describes the following species:—(Pœcilus) *F. lamprodera*, *l. c.* p. 232, North China; *F. punctibasis*, *l. c.* p. 233, North China: (Pterostichus) *F. cordigera*, *l. c.* p. 234, Central Asia; *F. variipes*, *l. c.* p. 235, Siberia; *F. septentrionis*, *l. c.* p. 238 (=*St. borealis*, Motsch.), Eastern Siberia: (Tapinopterus) *F. speluncicola*, *l. c.* p. 239, Greece; *F. crassiuscula*, *l. c.* p. 240, Turkey: (Haptoderus) *F. fairmairei*, *l. c.* p. 243, Constantinople; *F. festinans* (Friv.), *l. c.* p. 245, Hungary; *F. molopina*, ibid., Constantinople; *F. rectangula*, *l. c.* p. 246 (=*wiedemanni*, Fairm. *nec* Chaud.), Anatolia; *F. schmidti* (Kunze), ibid., Carinthia and Carniolia; *F. kiesenwetteri*, *l. c.* p. 248, Pyrénées-orientales; *F. parvula*, ibid.; *F. latiuscula*, *l. c.* p. 249, Russian America; *F. rudimentalis*, *l. c.* p. 250, Reynosa; *F. iripennis*, ibid., beyond the Caucasus; *F. properans*, *l. c.* p. 252, Bosphorus; *F. infima*, *l. c.* p. 253, Pyrenees; *F. amblyptera*, ibid., Pyrenees: (Molops) *M. simplex*, *l. c.* p. 254, Banat; *M. medius*, *l. c.* p. 257, Apennines; *M. orthogonius*, *l. c.* p. 258, Banat.

Feronia. Castelnau (*l. c.*) describes the following new Australian species of this genus:—[Group I. Omalosoma] *F. atlas*, p. 203, Clarence River; *F. obesa*, p. 204, Clarence River; *F. solandersii*, ibid., New South Wales; *F. episcopalis*, ibid., New South Wales; *F. superba*, p. 205, New South Wales; *F. wilsoni*, ibid., Brisbane; *F. hercules*, ibid., Queensland; *F. cunninghamii*, p. 206, Rockhampton; *F. viridescens*, ibid., Clarence River; *F. nitidicollis*, ibid., Clarence River; *F. dingo*, ibid., Victoria; *F. yarræ*, ibid., Victoria: [Group II. Pterostichus] *F. regalis*, p. 207, New South Wales; *F. ducalis*, ibid., Illawarra; *F. comes*, ibid., Clyde River; *F. æques* (sic), p. 208, Illawarra; *F. gippsiensis*, ibid., Gipps's Land; *F. miles*, ibid., Clyde River; *F. satrapa*, ibid., Gipps's Land; *F. peronii*, p. 209, Victoria; *F. crœsus*, ibid., Victoria; *F. plutus*, ibid., Victoria; *F. opulenta*, p. 210, Victoria; *F. lesueurii*, ibid., Illawarra; *F. tasmanica*, ibid., Tasmania; *F. diemenensis*, ibid., Tasmania; *F. victoriæ*, ibid., Victoria; *F. auricollis*, p. 211, Victoria; *F. mastersii*, ibid., Pine Mountains; *F. wilcoxii*, ibid., Clarence River; *F. gippslandica*, ibid., Gipps's Land; *F. phillipsii*, p. 212, Gipps's Land; *F. semiviolacea*, ibid., Victoria; *F. impressicollis*, ibid., New South Wales and Queensland; *F. vilis*, ibid., Victoria; *F. subvilis*, p. 213, Victoria; *F. lapeyrousii*, ibid., New South Wales; *F. resplendens*,

ibid., New South Wales; *F. hunteriensis*, ibid., Hunter River; *F. striatocollis*, p. 214, *F. purpureolimbata*, ibid., and *F. impressipennis*, ibid., Clarence River; *F. aubei*, p. 215, Hunter River; *F. azureomarginata*, ibid., New South Wales; *F. viridilimbata*, ibid., Brisbane; *F. amabilis*, ibid., New South Wales; *F. viridimarginata*, p. 216, Brisbane; *F. darlingii*, ibid., Queensland: [Group III. Omaseus] *F. mitchelii*, p. 216, Queensland, New South Wales, and Victoria; *F. rufipalpis*, ibid., Victoria: [Group IV. Pœcilus] *F. resplendens*, p. 217, interior of Australia; *F. iridipennis*, ibid., New South Wales, Victoria, and Adelaide; *F. iridescens*, p. 218, Queensland and Paroo River; *F. interioris*, ibid., Paroo River; *F. gagatina*, ibid., Tasmania; *F. subgagatina*, ibid., Pine Mountains; *F. rufilabris*, p. 219, Pine Mountains; *F. funebris*, ibid., Mount Gambier: [Group V. Omaseus] *F. lachlandiensis*, p. 219, Lachlan River; *F. clarenciensis*, ibid., Clarence River; *F. subcarbonaria*, p. 220, Victoria and New South Wales; *F. centralis*, ibid., Darling River; *F. arnheimensis*, ibid., Arnheim's Land; *F. occidentalis*, ibid., King George's Sound; *F. satanas*, p. 221, King George's Sound: [Group VI. Percus] *F. bipunctatus*, p. 221, Melbourne; *F. montana*, ibid., Gipps's Land; *F. lacustris*, p. 222, Lake Alexandrina: [Group VII. Abax] *F. boisduvalii*, p. 222, and *F. reichei*, ibid., New South Wales: [Group VIII. Steropus] *F. germari*, p. 222, Adelaide; *F. saphyreo-marginata*, ibid., Melbourne; *F. saphyripennis*, p. 223, Adelaide and Melbourne; *F. esmeraldipennis*, ibid., Adelaide; *F. olivieri*, ibid., Adelaide and Melbourne; *F. bonvouloirei*, ibid., Brisbane; *F. rockhamptoniensis*, ibid., Rockhampton; *F. waterhousii*, p. 224, Adelaide; *F. elegantula*, ibid., King George's Sound; *F. mastersii**, ibid., Port Lincoln; *F. blagravii*, ibid., Swan River: [Group IX. Argutor] *F. inedita*, p. 225, Queensland.

Feronia. Chaudoir (Rev. et Mag. Zool. 1868) describes the following new North-American species of this genus:—(Subg. Lophoglossus) *F. canadensis*, p. 331, Toronto; *F. prætermissa*, ibid., Louisiana and Texas: (Subg. Evarthrus) *F. ovulum*, p. 332, South Carolina; *F. acuminata*, p. 333, Texas; *F. diligenda*, p. 334: (Subg. Haplocœlus) *F. oregona*, p. 335: (Subg. Hypherpes) *F. sejungenda*, p. 336, California: (Subg. Hammatomerus) *F. morionides*, p. 337, California: (Subg. Cryobius) *F. subsinuosa*, p. 339, Kadjak; *F. arcticola*, ibid., Greenland; *F. labradorensis*, p. 340; *F. diplogma*, ibid., north-west coast.

Loxandrus lucens, Chaudoir, *l. c.* p. 342, Texas; *L. parvulus*, Chaudoir, ibid., Carolina; *L. micans*, Chaudoir, ibid., Louisiana; *L. piceolus*, Chaudoir, *l. c.* p. 343, Texas; *L. crenulatus*, Chaudoir, ibid., Texas; *L. proximus*, Chaudoir, *l. c.* p. 344, Texas; *L. rapidus*, Chaudoir, ibid., Louisiana.

Pogonus texanus, Chaudoir, *l. c.* p. 344, Texas (the only true *Pogonus* from North America).

Camptoscelis minor, Fairmaire, *l. c.* p. 771, Simon's Bay.

Omaseus colligatus, Walker, Lord's Naturalist in Vancouver's Island, ii. p. 314, Vancouver's Island.

Amara extensa, Walker, *l. c.* p. 314, Vancouver's Island.

Amara (*Cælia*) *incerta*, Gautier des Cottes, *l. c.* p. 326, Taurus.

Amara misella (Schaum, MS.), L. Miller, *l. c.* p. 9, East Galicia.

Amara helleri, Gredler, Col. Hefte, iii. p. 60, Tyrol.

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* Name previously employed by the author (*l. c.* p. 211).

Sphodrus favieri, Fairmaire, *l. c.* p. 473, Morocco.

Calathus ruficollis, Gautier des Cottes, *l. c.* p. 323, Sicily.

Calathus encaustus, Fairmaire, *l. c.* p. 474, Biskra.

Calathus zeelandicus, Redtenbacher, *l. c.* p. 17, Auckland.

Dicrochile. Castelnau (*l. c.*) describes the following new Australian species of this genus:—*D. gigas*, p. 152, Rockhampton; *D. punctipennis*, p. 153, Brisbane; *D. punctato-striata*, ibid., Melbourne; *D. quadricollis*, ibid., Victoria; *D. mantana* (? *montana*), ibid., Victoria; *D. minuta*, p. 154, Melbourne, Victoria, Tasmania, &c.

Anchomenus raptor, Redtenbacher, *l. c.* p. 18, and *A.* (*Agonum*) *bothriophorus*, Redt. *l. c.* p. 19, Tahiti.

Patrobus carpathicus, L. Miller, *l. c.* p. 7, and *P. quadricollis*, L. Miller, ibid., East Galicia.

Trechus. Pandellé (Mat. pour la Faune des Col. de France) describes the following new species of this genus:—*T. kiesenwetteri*, *l. c.* p. 140, Hautes Pyrénées; *T. schaumii*, *l. c.* p. 141, Swiss Alps; *T. delarouzei*, *l. c.* p. 146, Basses-Alpes; *T. grenieri*, *l. c.* p. 147, Hautes Pyrénées; *T. bonvouloiri*, *l. c.* p. 148, Hautes Pyrénées; *T. aubei*, *l. c.* p. 149, Piedmontese Alps; *T. putzeysi*, ibid., Maritime Alps; *T. fairmairei*, *l. c.* p. 151, Maritime Alps; *T. raymondi*, *l. c.* p. 154, France; and *T. barnevillei*, *l. c.* p. 156, north of Spain.

Trechus plicatulus, L. Miller, *l. c.* p. 10, and *T. subterraneus*, L. Miller, ibid., East Galicia.

Anophthalmus pilosellus, L. Miller, *l. c.* p. 11, East Galicia.

Anophthalmus pusio, Horn, Trans. Amer. Ent. Soc. ii. p. 125, Erhart's Cave, Virginia; *A. pubescens*, Horn, *l. c.* p. 126, Cave-City Cave.

Anophthalmus chaudoirii, C. Bris. de Barnev. Mat. pour la Faune des Col. de Fr. p. 161, France.

Callistides.

Periblepusa, g. n., Redtenbacher, Reise der Novara, Zool. ii. Col. p. 20. Resembling *Elaphrus* in form. Sp. *P. elaphroides*, sp. n., Redt. *l. c.* p. 21, pl. 1. fig. 9, New Zealand.

Bembidiides.

Tachys. Chaudoir (Rev. et Mag. Zool. 1868, pp. 211–216) remarks upon various North-American species of this genus. *T. coruscus* (Lec.) includes two species = *æneipennis* (Motsch.) and *coruscus* (Lec.); *T. pulchellus* (Lec.) is not *pulchellus* (Laf.), but=*incurvus* (Say), from which *T. granarius* (Dej.) is distinct; *T. mendax* (Lec.)=*ferrugineus* (Dej.).

Bembidium. Chaudoir (*l. c.* pp. 242–244) changes *B. planum* (Hald.) to *B. guexii*, *B. laticolle* (Lec.) to *nubiculosum*, and *B. tessellatum* (Lec.) to *conspersum*, on account of the preoccupation of the names.

Bembidium bulsanense (Gredl.) is regarded by Kraatz (Berl. ent. Zeitschr. 1868, p. 337) as only a local colour-variety of *B. eques*.

Amerizus, g. n., Chaudoir, Rev. et Mag. Zool. 1868, p. 216. Allied to *Bembidium* (*Peryphus*); outer lobe of maxillæ very long and composed of a single piece; mandibles porrect, nearly straight. Sp. *Trechus spectabilis* (Mann.).

New species:—

Tachys oopterus, Chaudoir, Rev. et Mag. Zool. 1868, p. 212, Louisiana; *T.*

pallidus, Chaudoir, ibid., Texas; *T. umbripennis*, Chaudoir, *l. c.* p. 213, United States; *T. fuscicornis*, Chaudoir, *l. c.* p. 214, Louisiana; *T. ovipennis*, Chaudoir, *l. c.* p. 215, United States.

Anillus fortis, Horn, Trans. Amer. Ent. Soc. ii. p. 127, Eastern Tennessee.

Bembidium. Of this genus Chaudoir describes the following new North-American species:—*B. lorquinii*, *l. c.* p. 239, California; *B. carinula*, ibid. (= *impressum*, Lec.), Rupert's Land; *B. tetragonoderum*, *l. c.* p. 240, California: (Subg. *Peryphus*) *B. texanum*, ibid., Texas; *B. haplogonum*, *l. c.* p. 241, California; *B. rufotinctum*, ibid., *B. platyderum*, *l. c.* p. 242, New York: (Subg. *Notaphus*) *B. pilatei*, *l. c.* p. 243, Texas; *B. hamiferum*, *l. c.* p. 244, Texas; *B. sordidulum*, ibid., California.

Bembidium basale, L. Miller, Verh. zool.-bot. Ges. in Wien, xviii. p. 12, East Galicia.

Peryphus æqualis, Walker, Lord's Naturalist in Vancouver's Island, ii. p. 316, Vancouver's Island.

Tachypus cyanicornis, Pandellé, Mat. pour la Faune des Col. de France, p. 163, Hautes-Pyrénées.

Scotodipnus pandellei, F. de Saulcy, Mat. pour la Faune des Col. de France, p. 162, Hautes-Pyrénées.

Pseudomorphides.

Castelnau has described two species of *Silphomorpha* under the name of *marginata*. For the second of these Reiche proposes the name of *castelnaui* (Col. Hefte, iii. p. 2).

Silphomorpha. Castelnau (Trans. Roy. Soc. Vict. viii.) describes the following new Australian species of this genus:—*S. picta*, p. 111, Queensland; *S. marginata*, ibid., Paroo River; *S. quadrisignata* *, ibid., South Australia; *S. bicolor*, ibid., Queensland; *S. amabilis*, p. 112, Port Denison, Australia; *S. marginata*, ibid., Melbourne and Sydney; *S. bimaculata*, ibid., Rockhampton; *S. biplagiata*, ibid., Brisbane; *S. discoidalis*, ibid., Murray River; *S. thouzeti*, p. 113, Rockhampton; *S. rockhamptonensis*, ibid.; *S. occidentalis*, ibid., Swan River; *S. brisbanensis*, ibid., Brisbane &c.; *S. guttifer*, ibid., and *S. grandis*, p. 114, Port Denison; *S. striata*, ibid., New South Wales; *S. vicina*, ibid., Brisbane; *S. denisonensis*, ibid., Port Denison; *S. tasmanica*, p. 115; *S. lævis*, ibid., Port Denison; *S. dubia*, ibid., New South Wales; *S. semistriata*, ibid., Port Denison; *S. ovalis*, p. 116, Queensland; *S. lævigata*, ibid., Victoria.

Adelotopus. Castelnau (*l. c.*) describes the following new Australian species of this genus:—*A. vicinus*, p. 117, Sydney; *A. parocnsis*, ibid., Central New Holland; *A. occidentalis*, ibid., Swan River; *A. politus*, ibid., Brisbane and Clarence River; *A. punctatus*, ibid., Clarence River; *A. cornutus*, ibid., Arnheim's Land; *A. fasciatus*, p. 118, Sydney; *A. affinis*, ibid., Sydney; *A. zonatus*, ibid., Melbourne; *A. brunneus*, p. 119, Swan River; *A. castaneus*, ibid., Swan River; *A. filiformis*, ibid., Adelaide; *A. obscurus*, p. 120, Sydney; *A. bicolor*, ibid., Victoria.

Dytiscidæ.

Hydaticus transversalis. Kraatz remarks (Berl. ent. Zeitschr. 1868, p. 288)

* Misprinted *quadrisquana*.

that Thomson, in making two species of the forms described under this name by previous authors, has entirely got rid of the name *transversalis*, of which he does not approve. He quotes Thomson's descriptions of the two new species, *H. punctipennis* and *H. lævipennis*.

Agabus affinis (Payk.). Sharp discusses the characters of this species and of *A. unguicularis* (Thoms.), which has been identified with it both in this country and on the Continent. Ent. M. Mag. v. pp. 17–18.

Aubé states, from the examination of additional materials, that *Hydroporus hispanicus* (Rosenh.) is distinct from *H. opatrinus* (Germ.), but that *H. lareyniei* (Fairm.) and *coarcticollis* (Reiche) are identical with *H. hispanicus*. The latter name has the priority. Bull. Soc. Ent. Fr. 1868, p. xlv.

Hydroporus elegans. Rye remarks upon a difference in the form of the thorax in the two sexes of this species. Ent. M. Mag. v. p. 169.

Hydroporus melanocephalus. The species cited under this name by Preller is not the *H. melanocephalus* (Aubé). Kraatz, Berl. ent. Zeitschr. 1868, p. 290.

Hydroporus elongatus (Sturm) occurs near Lanercost, Cumberland, according to Bold, Ent. M. Mag. iv. p. 283.

Hydroporus nicobaricus, sp. n., Redtenbacher, Reise der Novara, Zool. ii. Col. p. 21, Nicobars.

Haliplus varius (Nicol.) is also recorded by Bold from near Newcastle, *l. c.* p. 284.

Agabus hydroporoides (Murr.) is a *Celina*, and *Eunectes conicollis* (Woll.) = *helvolus* (Klug). Harold, Col. Hefte, iv. p. 100.

Agabus solieri (Aubé) occurs in Scotland, according to Sharp, Ent. M. Mag. iv. p. 232. See also M'Nab, *l. c.* p. 283.

Dytiscus lapponicus. Its occurrence in Ireland recorded by J. E. Somerville, Ent. M. Mag. v. pp. 141–142.

Læcophilus (sic) *maculosus*, sp. n., Walker, Lord's Naturalist in Vancouver's Island &c. ii. p. 317, Vancouver's Island and Northern United States.

Gyrinidæ.

Sharp publishes (Ent. M. Mag. v. pp. 52–60) descriptions of the British species of this family. He characterizes the genera *Gyrinus* and *Orectocheilus*, and enumerates 10 species, namely :—*G. minutus* (Fab.), *urinator* (Ill.), *natator* (Scop.), of which *G. meryus* (Ahr.) is the southern form, *bicolor* (Payk.), *distinctus* (Aubé), *caspius* (Aubé), *colymbus* (Er.), *marinus* (Gyll.), *opacus* (Sahlb.), and *O. villosus* (Fab.).

Gyrinus discifer (Walk.) is described and figured, and referred to the genus *Gyretes*, by Redtenbacher (Reise der Novara, Zool. ii. Col. p. 24, pl. 1. fig. 11).

Gyretes ceylonicus, sp. n., Redtenbacher, *l. c.* p. 24, pl. 1. fig. 10, Ceylon.

Patrus dilatatus, sp. n., Redtenbacher, *l. c.* p. 25, pl. 1. fig. 12, Ceylon.

Palpicornia.

Kraatz remarks (Berl. ent. Zeitschr. 1868, p. 290) that Mulsant's name *Helophorus obscurus* has the right of priority for Erichson's *H. aquaticus* over *H. æneipennis* (Thoms.).

Frauenfeld (Verh. zool.-bot. Ges. in Wien, xviii. p. 900) notices a speci-

men of *Hydrous piceus* having the left elytron a little shorter than the right, and finely transversely aciculate.

Philhydrus nigriceps, sp. n., Redtenbacher, Reise der Novara, Zool. ii. Col. p. 26, Nicobars.

Tropisternus binotatus, sp. n., Walker, Lord's Naturalist in Vancouver's Island &c. ii. p. 318, Vancouver's Island.

STAPHYLINIDÆ.

Aleocharides.

Stenusa. Kraatz (Berl. ent. Zeitschr. 1868, pp. 339–340) maintains the distinctness of this genus in opposition to Fauvel, and refers especially to the structure of the mentum.

Atemeles. Kraatz also (*l. c.* pp. 340–341) maintains that this genus is distinct from *Lomechusa*, and remarks that they can only be combined if we deny that the structure of the buccal organs is of systematic value. He adds that the third German species of *Atemeles*, which has been referred to *Lomechusa pubicollis* (Bris.), is not identical with *L. inflata* (Zett.), which appears to be a rare northern species.

Crataræa (Thoms.). Kraatz (*l. c.* pp. 341–342) also maintains the priority of his generic name *Haploglossa* (since changed by him to *Microglossa* *) to *Crataræa*.

Cyphea (Fauv.). Kraatz (*l. c.* pp. 342–344) discusses the characters of *Oxypoda curtula* (Erichs.), upon which Fauvel founds this genus, and comes to the conclusion that it belongs to *Placusa*.

Ocalea procera and *O. spadicea* (Erichs.) belong to the genus *Aleochara*, according to Kraatz (*l. c.* pp. 344–345).

Homalota nigritula. Kraatz remarks (Berl. ent. Zeitschr. 1868, p. 291) that Thomson cites *H. nigritula* (Kr.) as a synonym of his *H. boletobia*, but without indicating in what particulars he considers it to differ from *H. nigritula* (Grav.). Hence Kraatz regards *H. boletobia* as a synonym of *H. nigritula* (Grav., Kr.), and proposes the name of *H. gravenhorstii* for Thomson's *H. nigritula*.

Stichoglossa semirufa (Erichs.). Bethe (Stett. ent. Zeit. 1868, p. 166) remarks upon the characters of this species, in which he says the abdomen has a distinct longitudinal keel upon both the sixth and seventh segments.

Homalota celata (Thoms. *nec* Er.) = *H. nigra* (Kraatz), according to Crotch (Berl. ent. Zeitschr. 1868, p. 404).

Hoplandria ochracea (Kraatz) = *Gyrophæna lateralis* (Melsh.). Harold, Col. Hefte, iv. p. 100.

Aleochara lygæa (Kraatz) and *Oxypoda flavicornis* (Kraatz) are recorded as occurring in Scotland by Sharp, Ent. M. Mag. v. p. 101.

Myllæna minima (Kraatz) is recorded as a British species by Rye, Ent. M. Mag. iv. p. 180.

Gyrophæna strictula (Erichs.). Rye records the occurrence of this insect in Britain; the examples hitherto referred to it belong to *G. polita* (Grav.). Ent. M. Mag. iv. p. 259.

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* Kraatz has been unfortunate in this change of name, *Microglossus* having been already employed for a genus of Parrots.

New species:—

Falagria fauveli, Solsky, Horæ Soc. Ent. Ross. v. p. 113, Australia.

Alcochara semivelutina, Solsky, Horæ Soc. Ent. Ross. v. p. 120, Mexico.

Atemeles reflexus, Walker, Lord's Naturalist in Vancouver's Island &c. ii. p. 317, Vancouver's Island.

Calodera atricapilla, Scriba, Berl. ent. Zeitschr. 1868, p. 153, Tuscany.

Homalota subsenescens, Scriba, *l. c.* p. 153, Pyrenees.—*Homalota silvicola*, Fuss, Berl. ent. Zeitschr. 1868, p. 353, Cleves; *H. affinis* and *H. nitens*, Fuss, *l. c.* p. 354, Ahrweiler.—*Homalota carpathica*, L. Miller, Verh. zool.-bot. Ges. in Wien, xviii. p. 13, East Galicia.

Oxypoda bisulcata, Redtenbacher, Reise der Novara, Zool. ii. Col. p. 27, Sidney.

Myllæna paradoxa, Scriba, *l. c.* p. 154, Piedmont.

Leptusa pandellei, C. Brisout de Barneville, Mat. pour la Faune des Col. de France, p. 164, *L. linearis*, C. Bris. *l. c.* p. 165, and *C. glacialis*, C. Bris. ibid., near Bagnères de Bigorre; *L. bouvouloirii*, C. Bris. *l. c.* p. 166, Hautes-Pyrénées.

Tachyporides.

Mycetoporus punctipennis, sp. n., Scriba, Berl. ent. Zeitschr. 1868, p. 155, Servia.

Hypocyptus capensis, sp. n., Redtenbacher, Reise der Novara, Zool. ii. Col. p. 27, Cape Town.

Coproporus grandis, sp. n. (Fauv. MS.), Solsky, Horæ Soc. Ent. Ross. v. p. 121, Mexico.

Staphylinides.

Quedius curtus (Redt.) is not Erichson's species, but more nearly resembles large specimens of *Q. fulgidus* with red elytra (Kraatz, Berl. ent. Zeitschr. 1868, p. 291). *Q. præcox* (Redt.) is an immature example of *Q. peltatus* (Kraatz, *l. c.* p. 292).

Kraatz changes his *Quedius marginalis* to *Q. mutatus*, as a species was previously described under the former name by Mäklin. Col. Hefte, iv. p. 104.

Kraatz (Berl. ent. Zeitschr. 1868, p. 351) has notes on *Philonthus temporalis* and *tenuicornis* (Muls.), and *P. addendus* (Sharp).

Holisus ater (Motsch.). The details of the mouth are figured by Solsky. Horæ Soc. Ent. Ross. v. pl. 4. figs. 4–4*c*.

Rye publishes a short character of *Ocypus saulcyi* (Reiche). Ent. M. Mag. iv. p. 232.

Heterothops. Rye discusses the characters of the British species of this genus. Ent. M. Mag. iv. pp. 256–259.

Philonthus nigriventris (Thoms.). Sharp records its occurrence in Scotland, Ent. M. Mag. v. p. 101.

New species:—

Heterothops niger, Kraatz, Berl. ent. Zeitschr. 1868, p. 352, Thuringia.

Sunius variegatus (Fauvel, MS.), Solsky, Horæ Soc. Ent. Ross. v. p. 114, North America.

Acylophorus luctuosus, Solsky, Horæ Soc. Ent. Ross. v. p. 122, Mexico.

Quedius puniceipennis (Sturm, MS.), Solsky, *l. c.* p. 123, *Q. impunctus* Solsky, *l. c.* p. 124, and *Q. anthracinus*, Solsky, *l. c.* p. 125, Mexico.

Quedius amplicollis, Scriba, Berl. ent. Zeitschr. 1868, p. 155, Spain.

Xantholinus hongkongensis, Redtenbacher, Reise der Novara, Zool. ii. Col. p. 28, Hong Kong.

Ocypus australis, Redtenbacher, *l. c.* p. 28, Sidney.

Staphylinus affinis, Solsky, *l. c.* p. 126, Mexico.

Philonthus. Solsky describes the following new Mexican species:—*P. boucardi*, *l. c.* p. 127; *P. iridiventris*, *l. c.* p. 128; *P. rufo-plagiatus*, *l. c.* p. 130; *P. scintillans*, *l. c.* p. 131; *P. apheles*, *l. c.* p. 132; *P. pauxillus*, *l. c.* p. 133; *P. fumosus*, *l. c.* p. 134; *P. incertus*, *l. c.* p. 135; *P. duploseriatus*, *l. c.* p. 136; and *P. cribellatus*, *l. c.* p. 137.

Belonuchus erythropterus, Solsky, *l. c.* p. 137, *B. xanthopus*, Solsky, *l. c.* p. 139, *B. xanthomelas*, Solsky, ibid., and *B. iridescens*, Solsky, *l. c.* p. 140, from Mexico.

Philonthus insularis, Gautier des Cottes, Mitth. Schw. ent. Gesellsch. ii. p. 326, Corsica.

Xanthopygus cacti, Horn, Trans. Amer. Ent. Soc. ii. p. 131, Arizona.

Lispinus æquipunctatus, Leconte, Trans. Amer. Ent. Soc. ii. p. 50, New Mexico.

Pæderides.

Dacnochilus lætus (Lec.). Solsky (Horæ Soc. Ent. Ross. v. p. 143) describes the structure of the mouth in this species, which he says greatly resembles that of *Pæderus*. He figures the buccal organs, *l. c.* pl. 4. figs. 2 *a–c*. *Litocharis angularis* and *macularis* (Erichs.) probably belong to this genus.

Pæderus longicornis (Aubé), *ruficollis* (Fab.), and *gemellus* (Kraatz) are probably varieties of one species. See L. Miller, Verh. zool.-bot. Ges. in Wien, xviii. p. 15.

Achenium ephippium (Er.). Scriba (Berl. ent. Zeitschr. 1868, p. 160) notices a variety of this species from Sarepta, having a black spot in the outer hinder angle of each elytron.

New species:—

Lathrobium krniense, Joseph, Berl. ent. Zeitschr. 1868, p. 365, on the Krn (Terglou Mountains).

Cryptobium cephalotes, Solsky, Horæ Soc. Ent. Ross. v. p. 141, Mexico.

Lithocharis zeelandica, Redtenbacher, Reise der Novara, Zool. ii. Col. p. 29, New Zealand.

Lithocharis brevipennis, Scriba, Berl. ent. Zeitschr. 1868, p. 156, Pyrenees.

Scopæus subcylindricus, Scriba, *l. c.* p. 156, Spain.

Pinophilides.

Pinophilus geniculatus, Redtenbacher, Reise der Novara, Zool. ii. Col. p. 30, Rio Janeiro; *P. opacus*, Redt. ibid., Sidney.

Oxytelides.

Oxytelus. Pandellé publishes (Mat. pour la Faune des Col. de France, pp. 170–173) a tabular synopsis of the species of this genus allied to *O.*

depressus (Grav.), which he regards as forming a distinct group. The known species here referred to are:—*O. speculifrons* (Kraatz), *depressus* (Grav.), *hamatus* (Fairm.), *pumilus* and *complanatus* (Erichs.). Four new species are described, viz. *Oxytelus clypeo-nitens*, Pandellé, *l. c.* p. 171, St. Germain-en-Laye; *O. simplex*, Pandellé, ibid., Tarbes; *O. fairmairei*, Pandellé, *l. c.* p. 172, Hautes-Pyrénées; and *O. saulcyi*, Pandellé, ibid., Tarbes.

Trigonurus. Solsky describes the characters of this genus, which he agrees with Reiche in regarding as the type of a distinct tribe taking its place near the *Phlœocharides* and *Piestides* (Horæ Soc. Ent. Ross. v. p. 162). He also describes and figures *T. asiaticus* (Reiche), *l. c.* p. 163, pl. 4. fig. 3.

Bledius spectabilis (Kr.). Kraatz (Berl. ent. Zeitschr. 1868, pp. 346–347) maintains the distinctness of this species from *B. tricornis* (Herbst), and gives the synonymy of the species as follows:—1. *B. tricornis* (Herbst, Ol., Kr.)= *tricornis* (Erichs. Col. March.)=*nuchicornis* (Muls.); 2. *B. spectabilis* (Kr.) =*tricornis* (Erichs. Gen. et Spec.)=*tricornis* (Muls., Fauv.).

Bledius fuscipes (Rye). Kraatz discusses the characters of this species (Berl. ent. Zeitschr. 1868, p. 292).

Oxytelus eppelsheimii (Bethe) is described by Kellner (Berl. ent. Zeitschr. 1868, p. 358).

Platystethus constrictus, sp. n., Scriba, Berl. ent. Zeitschr. 1868, p. 157, Andalusia; *P. angustipennis*, sp. n., Scriba, *l. c.* p. 158, Florence.

Compsochilus miles, sp. n., Scriba, Berl. ent. Zeitschr. 1868, p. 158, Tocana.

Omaliides.

Anthobium scribæ (Schauf.). The ♀ of this species has the sutural angle of the elytra more or less acuminate, according to Scriba (Berl. ent. Zeitschr. 1868, p. 160).

Heterops. In opposition to Fauvel, Kraatz (Berl. ent. Zeitsch. 1868, pp. 345, 346) shows that no genus *Heterops* was ever established by Eschscholtz, and that the name cannot have priority of his *Amphichroum*.

A larva, supposed to be that of *Micralymma*, is figured by Packard, Amer. Natural. ii. p. 278, fig. 3. See also Leconte (*l. c.* p. 329), who thinks the insect may be *M. stimpsoni*.

Niphetodes, g. n., L. Miller, Verh. zool.-bot. Ges. in Wien, xviii. p. 16. Allied to *Boreaphilus*; labial palpi with joint 1 twice as long as 2; tarsi with first 4 joints subequal. Sp. *N. redtenbacheri*, sp. n., L. Miller, *l. c.* p. 17, East Galicia.

Omalium hiemale, sp. n., Fuss, Berl. ent. Zeitschr. 1868, p. 355, Cleves.

Anthobium silesiacum, sp. n., Letzner, Berl. ent. Zeitschr. 1868, p. 359, Silesia.

Anthobium clavipes, sp. n., Scriba, Berl. ent. Zeitschr. 1868, p. 159, Apennines, near Lucca.

Proteinides.

Rye publishes descriptions of the British species of this group. Ent. M. Mag. iv. pp. 205–210.

Megarthrus. Kraatz (Berl. ent. Zeitschr. 1868, pp. 349, 350) describes *M. sinuatocollis* (Lac.) and *M. affinis* (Miller), which he now regards as distinct species. *M. bellevoyei* (Saulcy) is identical with the latter, which is the

species described by Kraatz (Ins. Deutschl.) under the name of *M. sinuatocollis*.

Proteinus. Pandellé (Mat. pour la Faune des Col. de France, pp. 168–169) gives a tabular synopsis of the French species of this genus, of which he recognizes five, one of them described as new. The others are *P. brevicollis* (Erichs), *brachypterus* (Fab.), *macropterus* (Gyll.), and *atomarius* (Erichs.).

Proteinus crenulatus, sp. n., Pandellé, *l. c.* p. 169, Hautes-Pyrénées.

Micropeplides.

Micropeplus staphylinoides. Lubbock describes and figures the larva of this species found by him on the underside of dead boughs. Trans. Ent. Soc. Lond. 1868, pp. 275–277, pl. 13.

Pselaphidæ.

Bryaxis furcata (Motsch.). Bethe (Stett. ent. Zeit. 1868, p. 166) gives the diagnosis of this species, which has been detected at Sarepta by Becker.

Fustiger fuchsii (Brend.). Horn remarks (Trans. Amer. Ent. Soc. ii. p. 128) that he cannot detect the pair of 3-facetted ocelli ascribed by Brendel to this insect.

Lespès has observed that specimens of *Claviger* taken from one ants' nest and put into another of the same species, but from a different locality, were immediately destroyed. He supposes that the knowledge and toleration of *Claviger* is hereditary in certain races of ants, whilst others belonging to the same species are unacquainted with it. Bull. Soc. Ent. Fr. 1868, p. xxxviii.

Atinus, g. n., Horn, Trans. Amer. Ent. Soc. ii. p. 127. Palpi excessively short. Sp. *Ctenistes monilicornis* (Brend.).

Faronus pyrenæus, sp. n., C. Brisout de Barneville, Mat. pour la Faune des Col. de Fr. p. 173, Hautes-Pyrénées.

Scydmænidæ.

Scydmænus castaneus (Woll.) changed to *castanicolor*, on account of *S. castaneus* (Schaum) by Harold, Col. Hefte, iv. p. 104.

Eutheia colon, sp. n., Horn, Trans. Amer. Ent. Soc. ii. p. 131, Arizona.

Silphidæ.

Necrophorus lunatus (Lec.) changed to *luniger* by Harold (Col. Hefte, iv. p. 104) on account of *N. lunatus* (Fisch.).

Necrophilus subterraneus (Dahl). Horn records the occurrence of this European species in North America. Trans. Amer. Ent. Soc. ii. p. 125.

Necrophorus conversator, sp. n., Walker, Lord's Naturalist in Vancouver's Island &c. ii. p. 320, Vancouver's Island.

Anisotomidæ.

Sphærius politus, Horn, Trans. Amer. Ent. Soc. ii. p. 132, California.

Triarthron lecontei, Horn, *l. c.* p. 131, California.

Anisotoma discontignyi, C. Bris. de Barneville, Mat. pour la Faune des Col. de Fr. p. 173, Pyrenees.

Agathidium serie-punctatum, C. Bris. de Barneville, *l. c.* p. 174, Fontainebleau.

Trichopterygidæ.

Ptilium elongatum (Thoms. 1858) = *P. coarctatum* (Hal. 1858), according to Crotch (Berl. ent. Zeitschr. 1868, p. 404).

A. Matthews remarks that *Trichopteryx* (*Acrotrichis*) *obscœna* (Woll.), which he has taken in Sherwood Forest, is distinct from *T. guerinii* (Ent. M. Mag. v. p. 10). He characterizes *T. anthracina* (Matth.), *l. c.* p. 11, and *T. obscœna* (Woll.), *l. c.* p. 12; also a new species of *Ptilium* and a new genus.

Actidium, g. n., Matthews, *l. c.* p. 12. Allied to *Ptilium*; mesosternum broadly carinated, keel triangular, acuminate behind, extended in front to the neck. Sp. *P. coarctatum* (Hal.) = *elongatum* (Thoms.) = *filiforme* (Aubé); *P. transversale* (Erichs.) and *concolor* (Sharp).

Ptilium halidaii, sp. n., Matthews, *l. c.* p. 12, Sherwood Forest.

Ptenidium longicorne, sp. n., Fuss, Berl. ent. Zeitschr. 1868, p. 357, Ahrweiler.

Scaphidiidæ.

Scaphidium bipunctatum, Redtenbacher, Reise der Novara, Zool. ii. Col. p. 31, pl. 2. fig. 1, Rio Janeiro; *S. scutellare*, Redt. *l. c.* p. 32, New Zealand.

Histeridæ.

Teretrius mulsanti (Mars.) = *Paromalus rothi* (Rosenh.), according to Kraatz (Berl. ent. Zeitschr. 1868, p. 404).

Abbotia paykulliana and *georgiana* (Leach) = *Platysoma depressum* and *oblongum*, Harold, Col. Hefte, iv. p. 100. See also C. O. Waterhouse, Ent. M. Mag. v. p. 168.

Kraatz (Berl. ent. Zeitschr. 1868, pp. 335, 336) remarks on the distribution of *Saprinus fulminans* (Koltze), *S. chalcites* (Ill.), and *S. antiquulus* (Ill.).

Sphærosoma (Mars.) changed to *Sphæricosoma* by De Marseul, Col. Hefte, iv. p. 104.

Aubé has observed *Saprinus virescens* devouring the larvæ probably of *Haltica oleracea*. Bull. Soc. Ent. Fr. 1868, p. lvi.

New species:—

Hister desbrochersi, Sénac, L'Abeille, v. p. 139, Turkey.

Hister siculus, Tournier, L'Abeille, v. p. 142, Sicily.

Saprinus manes, Marseul, L'Abeille, v. p. 172, Upper Egypt.

Saprinus consimilis, Walker, Lord's Naturalist in Vancouver's Island &c. ii. p 319, Vancouver's Island.

Acritus sulcipennis, H. Fuss, Berl. ent. Zeitschr. 1868, p. 312, Königsberg.

Acritus rhenanus, Fuss, *l. c.* p. 356, Ahrweiler.

Platysoma chilense, Redtenbacher, Reise der Novara, Zool. ii. Col. p. 32, Chili.

Paromalus javanus, Redtenbacher, *l. c.* p. 33, Java.

Phalacridæ.

The transformations of *Olibrus affinis* (Sturm) are described by Laboulbène, Ann. Soc. Ent. Fr. 4e sér. viii. pp. 821–828, pl. 12. figs. 14–23 (larva with details).

Olibrus nigricollis, sp. n., Leconte, Trans. Amer. Ent. Soc. ii. p. 50, New Mexico; *O. vittatus*, sp. n., Leconte, *l. c.* p. 50, note, New York.

Phalacrus striatulus, sp. n., Tournier, L'Abeille, v. p. 143, Sicily; *P. minutus*, sp. n., Tourn. ibid., Geneva.

Nitidulidæ.

Murray changes the name of his *Amphicrossus bicolor* to *A. castaneus*, as Leconte has an *A. bicolor*. He also proposes the name of *Grammorus* for *Grammophorus* (Gerst.), the latter name being preoccupied. Col. Hefte, iv. p. 104.

Lobiopa setulosa (Lec.) changed to *setosa* by Harold (Col. Hefte, iv. p. 104) on account of *L. setulosa* (Erichs.).

Paromia westwoodi (Dohrn). Redtenbacher refers to some characters in Dohrn's description, confirmed by specimens, which render it doubtful whether the species figured by Westwood as *P. dorcoides* may not be distinct (Reise der Novara, Zool. ii. Col. p. 35).

Meligethes subrugosus (Sturm). Sharp records its occurrence in Galloway. Ent. M. Mag. v. p. 100.

Aparomia, g. n., Redtenbacher, Reise der Novara, Zool. ii. Col. p. 35. Allied to *Paromia*, but with the head only half as broad as the thorax. Sp. *A. bifasciata*, sp. n., Redt. *l. c.* p. 36, pl. 2. fig. 2, Chili.

Niliodes, g. n., Murray, Col. Hefte, iv. p. 78. Subrotundate, subdepressed, opaque-subsericeous, subpapillose, disk slightly elevated, with long erect hairs, each elytron with a median tuft of hairs; labrum transverse, subquadrate; mandibles short, simple; antennæ with joint 1 large, 2–8 slender, 7–8 smallest, club of 3 joints, compressed, obovate; eyes large; thorax with rounded angles, strongly emarginate in front, sides widely flattened, translucent; scutellum minute; last joint of tarsi elongate. Sp. *N. bipenicillatus* sp. n., Murray, *l. c.* p. 78, Amazons.

New species :—

Stelidota clavicornis, Fairmaire, Ann. Soc. Ent. Fr. 4e sér. viii. p. 774, Madagascar.

Æthina pubescens, Fairmaire, *l. c.* p. 774, Madagascar.

Lordites costulatus, Fairmaire, *l. c.* p. 775, Madagascar, Bourbon, Ceylon; *L. breviusculus*, Fairm. ibid., Madagascar.

Epuræa nigripennis, Redtenbacher, Reise der Novara, Zool. ii. Col. p. 34, Ceylon; *E. vulpecula*, Redt. ibid., Java.

Meligethes natricis, C. Brisout de Barneville, Mat. pour la Faune des Col. de Fr. p. 175, Cette.

Trogositidæ.

Trogosita spectabilis (Klug) is described by Fairmaire as *Alindria spectabilis* (Ann. Soc. Ent. Fr. 4e sér. viii. p. 776).

Micropeltis, g. n., Redtenbacher, Reise der Novara, Zool. ii. Col. p. 38. Allied to *Peltis*. Sp. *M. serraticollis*, sp. n., Redt. *l. c.* p. 39, pl. 2. fig. 4, Chili.

Elestora, g. n., Pascoe, Proc. Ent. Soc. Lond. 1868, p. xi. Allied to *Leperina*; eyes free; antennæ rather short, club with 3 transverse, perfoliate joints; labium deeply divided, ciliated. Sp. *E. fulgurata*, sp. n., Pascoe, ibid., Penang.

Leperina fasciculata, sp. n., Redtenbacher, *l. c.* p. 37, pl. 2. fig. 3, Sidney.

Nemosoma fasciata, sp. n., Fairmaire, Ann. Soc. Ent. Fr. 4e sér. viii. p. 776, Madagascar.

Peltis colobicoides, sp. n., Fairmaire, *l. c.* p. 777, Madagascar.

Colydiidæ.

Microprius, g. n., Fairmaire, Ann. Soc. Ent. Fr. 4e sér. viii. p. 770. Allied to *Coxelus*; narrow, nearly parallel; head projecting; antennal club of 2 large joints; prothorax transverse quadrate, sides finely crenulate, disk with 2 ribs on each side; elytra not dilated; tibiæ unarmed, slender; segment 1 of abdomen scarcely longer than 2. Sp. *M. terrchus*, sp. n., Fairm. *l. c.* p. 779, Simon's Bay.

Pycnomerus cribricollis, sp. n., Fairmaire, *l. c.* p. 780, Madagascar.

Brontes cinnamomeus and *B. quadraticollis*, sp. n., Fairmaire, *l. c.* p. 781, Madagascar.

Rechodes coquerelii and *R. fungosus*, sp. n., Fairmaire, *l. c.* p. 778, Madagascar.

Cerylon fagi, C. Brisout de Barneville, Mat. pour la Faune des Col. de Fr. p. 176, Fontainebleau, Compiègne.

Rhysodidæ.

Rhyzodes (sic) *parum-costatus* and *R. tubericeps*, sp. n., Fairmaire, Ann. Soc. Ent. Fr. 4e sér. viii. p. 782, Madagascar.

Cucujidæ.

Dryocora, g. n., Pascoe, Proc. Ent. Soc. Lond. 1868, p. xi. Allied to *Cucujus*; palpi acute; prothorax narrowed in front, its sides entire; prosternum broad; metasternum elongate; tarsi 4-jointed. Sp. *D. howittii*, sp. n., Pasc. ibid., New Zealand.

Parabrontes, g. n., Redtenbacher, Reise der Novara, Zool. ii. Col. p. 40. Allied to *Brontes*. Sp. *P. silvanoides*, sp. n., Redt. *l. c.* p. 40, New Zealand.

Telephanus fasciatus, sp. n., Redtenbacher, *l. c.* p. 41, Tahiti.

Cryptophagidæ.

Atomaria zetterstedti (Zett.?, Thoms.) = *salicicola* (Kraatz). Crotch, Berl. ent. Zeitschr. 1868, p. 404.

Cryptophagus capensis, sp. n., Redtenbacher, Reise der Novara, Zool. ii. Col. p. 41, Cape of Good Hope; *C. australis*, sp. n., Redt. *l. c.* p. 42, New Zealand.

Othnius lugubris, sp. n., Horn, Trans. Amer. Ent. Soc. ii. p. 132, Oregon; *O. mexicanus*, sp. n., Horn, *l. c.* p. 133, Mexico.

Dermestidæ.

Mulsant and Rey have published the monograph of the French species of this family, their tribe *Scuticolles* (Annales Soc. Linn. Lyon, xv. pp. 1–188). As usual they describe the general structure and mode of development of the insects composing the group, and indicate its bibliography, and then proceed to the classification and description of the species. They divide the family into two "branches," as follows:—

1. *Dermestaires*, with the mesosternum longer than broad; and
2. *Trogodermaires*, with the mesosternum broader than long.

The Dermestaires are again divided into two "Rameaux," namely, the *Dermestates*, with the prosternum not produced in a gorget below the mouth, and the *Mégatomates*, in which the prosternum forms a gorget. The former include the genera *Dermestes* and *Attagenus*; the latter the known genera *Megatoma* and *Hadrotoma*, and the new genus *Mesalia*.

The Trogodermaires are likewise divided into two "Rameaux"—the *Trogodermates*, with all the tarsi free and the mesosternum notched in front, and the *Orphilates*, with the anterior tarsi capable of being lodged in a furrow of the tibiæ and the mesosternum entire in front. The former group includes the genera *Trogoderma*, *Tiresias*, *Anthrenus*, and *Trinodes*; the latter consists only of the genus *Orphilus*. *Byturus* is not mentioned by the authors. The species of Redtenbacher's genus *Telopus* are also described (*l. c.* pp. 101–105).

The following species are figured by Mulsant and Rey:—*Dermestes lardarius* (Linn.), pl. 1. figs. 1–5 (imago, larva, pupa, and details); *Attagenus pellio* (Linn.), pl. 1. figs. 6–10 (imago with details and larva); *Tiresias serra* (Fab.), pl. 2. fig. 1; *Anthrenus scrophulariæ* (Linn.), pl. 2. figs. 2–4 (imago and larva); *Trinodes hirtus* (Fab.), pl. 2. figs. 5, 6 (imago and larva); *Orphilus niger* (Rossi)=*glabratus* (Fab.), pl. 2. figs. 7, 8 (imago and anterior leg); *Megatoma undata* (Linn.), pl. 3. fig. 1 (imago) and figs. 3 & 6 (antennæ ♂ & ♀); *Hadrotoma marginata* (Payk.), pl. 3. fig. 4 (imago), figs. 2 & 5 (antennæ ♂ & ♀); and *Trogoderma elongatula* (Fab.), pl. 3. figs. 7, 8 (imago and antenna), and 9, 10 (larva).

Byturus. Kiesenwetter (Berl. ent. Zeitschr. 1868, pp. 259–264) discusses the position of this genus, and reiterates his opinion, in opposition to that expressed by Gerstäcker, that it belongs to the Nitidularidæ. He maintains that the clothing of the tarsi beneath is analogous in *Byturus* and the *Cychramides*, and refers to peculiarities in the structure of the tarsi and wings in support of his view.

Dermestes cadaverinus (Fab.) and *D. peruvianus* (Cast.). Kraatz notices these species (Berl. ent. Zeitsch. 1868, p. 336).

Attagenus dichrous (Lec.) altered to *bicolor* by Harold (Col. Hefte, iv. p. 104) on account of *A. dichrous* (Roth).

C. Healy notices the habits and mode of life of *Dermestes lardarius*. Entomologist, iv. pp. 59–64.

Anthrenus museorum is figured with its larva and pupa, Amer. Natural. ii. p. 443, fig. 1.

Thaumaglossa, g. n., Redtenbacher, Reise der Novara, Zool. ii. Col. p. 43. Allied to *Trogoderma*; antennæ 10-jointed, last joint very large. Sp. *T. rufocapillata*, sp. n., Redt. *l. c.* p. 44, pl. 2. fig. 5, Hong Kong.

Mesalia, g. n., Mulsant and Rey, Ann. Soc. Linn. Lyon, n. s. xv. p. 109. Allied to *Hadrotoma*; antennæ 10-jointed; joint 1 of posterior tarsi, seen from beneath, nearly twice as long as 2. Sp. *M. guillebelli*, sp. n., Muls. & Rey, *l. c.* p. 109, Bresse.

New species:—

Dermestes noxius, Mulsant & Rey, Ann. Soc. Linn. Lyon, n. s. xv. p. 55 (= *domesticus*, Küst.), Marseilles.

Attagenus fulvipes, Mulsant & Rey, *l. c.* p. 71, Geneva; *A. stygialis*, Muls. & Rey, *l. c.* p. 73, Provence, Corsica; *A. distinctus*, Muls. & Rey, *l. c.* p. 85, Algeria, Greece, Italy; *A. wachanrui*, Muls. & Rey, *l. c.* p. 91; *A. bivittatus*, Muls. & Rey, *l. c.* p. 97, South Europe; *A. rufipennis*, Muls. & Rey, *l. c.* p. 100, Naples.

Telopus coquereli, Mulsant & Rey, *l. c.* p. 102, Oran; *T. civetta*, Muls. & Rey, *l. c.* p. 104, Algiers; *T. lynx*, Muls. & Rey, *l. c.* p. 105, Judea.

Hadrotoma depressa, Mulsant & Rey, *l. c.* p. 118, Dalmatia.

Trogoderma fuscicornis, Mulsant & Rey, *l. c.* p. 122, South of France; *T. albo-notata* (Reiche, MS.), Muls. & Rey, *l. c.* p. 128, Pyrenees; *T. hirsutula* (Reiche, MS.), Muls. & Rey, *l. c.* p. 134, Syria.

Trogoderma bifasciata, sp. n., Redtenbacher, *l. c.* p. 44, Chili.

Anthrenus funestus, Mulsant & Rey, *l. c.* p. 145 (= ? *verbasci*, Oliv. = ? *pictus*, Germ. = ? *delicatus*, J.-Duv.), South of France, Spain, Algeria; *A. goliath* (Saulcy, MS.), Muls. & Rey, *l. c.* p. 156, South of France, Egypt, Algeria; *A. exilis*, Muls. & Rey, *l. c.* p. 158, Algeria, Egypt; *A. liliputianus*, Muls. & Rey, *l. c.* p. 159, Egypt; *A. ochraceus* (Reiche, MS.), Muls. & Rey, *l. c.* p. 161, Syria.

Byrrhidæ.

Curimus zeelandicus, sp. n., Redtenbacher, Reise der Novara, Zool. ii. Col. p. 45, New Zealand.

Simplocaria inflata, sp. n., Leconte, Trans. Amer. Ent. Soc. ii. p. 62, California.

Parnidæ.

Strina, g. n., Redtenbacher, Reise der Novara, Zool. ii. Col. p. 46. Allied to *Pomatinus*. Sp. *S. aurichalcea*, sp. n., Redt. *l. c.* p. 46, Cape of Good Hope.

Hetcrocerus maculosus, sp. n., Fairmaire, Ann. Soc. Ent. Fr. 4e sér. viii. p. 476, Constantine; *H. curtulus*, sp. n., Fairm. *l. c.* p. 477, Tangier.

Lucanidæ.

Kaup publishes (Coleopt. Hefte, iii. pp. 4–32 and iv. pp. 1–31) a monographic revision of the *Passalides*, which he regards as a distinct family and divides into five subfamilies and numerous genera. The following is a sketch of his classification:—

(Eastern Hemisphere.)

Subfamily 1. Aulacocyclinæ. Prosternal peduncle immersed between the anterior coxæ and not visible; margin of clypeus smooth, without a tooth; prothorax surrounded by a sinuous furrow-margin.

Genus 1. *Aulacocyclus*.

Subfamily 2. ——. Prosternal peduncle distinctly projecting as a sharp ridge between the anterior coxæ; maxillæ (*Kiefern*) extended at the end, with two notches.

A. With three joints in the club.

2. *Solenocyclus*. With a narrow, not sinuous, furrow-margin round the whole prothorax.

3. *Leptaulax*. Margin of clypeus with acute teeth, chiefly as continuations of the frontal ridges.

B. With five joints in the club.

4. *Erionomus*. Clypeus with an erect spine, its margin nearly straight.

5. *Pleurarius*. Margin of clypeus curvately emarginate, with a strong projection above the margin of the labrum.

6. *Pentalobus*. Margin of clypeus with four or five projecting spines.

C. With six joints in the club.

a. Clypeus symmetrical.

7. *Macrolinus*. Margin of clypeus straight, only projecting at the margin of the labrum; joints of club narrow, first three shorter, second shortest.

8. *Mastochilus*. First three joints of club gradually abbreviated.

9. *Pharochilus*. Antennæ long, joints of club very short.

β. Margin of clypeus unsymmetrical.

10. *Eriocnemis*. Margin of clypeus projecting more or less irregularly; labium with a central shield separated from the lateral lobes by a furrow.

11. *Acraius*. Left half of head more developed than the right; centre of labium coalescent with lateral lobes.

(Western Hemisphere.)

Subfamily 3. PROCULINÆ. Prothorax disproportionately large.

12. *Proculus*. Truncated end of mandibles bidenticulate.

13. *Proculejus*. Lobes of joints of club shorter.

Subfamily 4. PASSALINÆ. Prothorax of normal size; the margin of the sides of the elytra never hairy.

14. *Passalus*. Club of the long antenna with three very short joints.

(Genera not yet characterized:—15. *Oileus*; 16. *Undulifer*; 17. *Stephanocephalus*; 18. *Pseudacanthus*; 19. *Phoroneus*; 20. *Pertinax*; 21. *Ptichopus*; 22. *Spasalus*.)

(Subfamily 5. NELEINÆ.)

The species referred by Kaup to the above genera are the following:—

Aulacocyclus (*l. c.* p. 4): *P. cylindraceus* (Perty) = *punctifrons* (Hope), *P. bihastatus* (Perch.), *P. bicanthatus* (Guér.), *P. edentulus* (M'Leay) = *cylindraceus* (Perch.) = *furcicornis* (Boisd.), *P. teres* (Perch.), and 12 new species, all from the Australian and Malayan regions.

Solenocyclus (*l. c.* p. 10): *P. exaratus* (Klug) = *manouffi* (Perch.).

Leptaulax (*l. c.* p. 11). AFRICAN SPECIES: *P. parastictus* (Imh.) = *africanus* (Perch.), *P. morbillosus* (Klug), *P. lævis* (Klug), *P. approximatus* (Klug), *P. quadrifrons* (Perch.), and *L. punctipectus*, sp. n., *l. c.* p. 11. ASIATIC SPECIES: *P. dentatus* (Web.) = *timoriensis* (Perch.), *P. bicolor* (Fab.) = *planus* (Ill.) = *vicinus* (Hope); *L. thorcyi*, sp. n., *l. c.* p. 13, and *L. eschscholtzii*, sp. n., *l. c.* p. 14.

Erionomus (*l. c.* p. 16): *P. planiceps* (Esch.) = *dasypleurus* (Imh.).

Pleurarius (*l. c.* iv. p. 1): *P. pilipes*, sp. n., Kaup, ibid., Sumatra.

Pentalobus (*l. c.* p. 17): *P. palinii* (Perch.), *P. barbatus* (Fab.), *P. savagei* (Perch.).

Macrolinus (*l. c.* p. 18): *P. latipennis* (Perch.), ? *P. nicobaricus* (Redt.) *M. weberi*, sp. n., *l. c.* p. 19, Philippines; *M. duivenbodei*, sp. n., ibid., Celebes.

Mastochilus (*l. c.* p. 19, and iv. p. 31): *P. polyphyllus* (M'Leay) = *sexden-*

tatus (Esch.) = *hexaphyllus* (Boisd.); *M. macleayi*, sp. n., *l. c.* p. 20, New Holland.

Pharochilus (*l. c.* p. 20): *P. dilutatus* (Dalm.) = *crinistrius* (Boisd.) = *chevrolatii* (Perch.), *P. politus* (Klug) = *dilatatus* (Perch.).

Eriocnemis (*l. c.* p. 21): *P. tridens* (Wied) = *latericulptus* (Perty) = *Ocythoë tridens* (Cast.), *P. moluccanus* (Guér.), *P. conspergus* (Boisd.), *P. australis* (Boisd.), and six new species, all Malasian or Australian.

Aceraius (*l. c.* p. 26): *P. grandis* (Burm.) = *emarginatus* (Perch.), *P. emarginatus* (Web.) = *lævicollis* (Wied) = *pilifer* (Perch.), *P. cancrus* (Perch.), *P. neelgheriensis* (Perch.), *P. naviculator* (Perch.), and eight new species, all Asiatic and Malasian.

Proculus (*l. c.* iv. p. 8): *P. goryi* (Melly), *P. opacipennis* (Thoms.), *P. mniszechii*, Kaup, *l. c.* p. 11 = *goryi* (Thoms.).

Proculejus (*l. c.* p. 13): *P. heros* (Truq.), *P. brevis* (Truq.), *P. hirtus* (Truq.), and five new species.

Passalus: *bicornis* (Truq.) *reticornis* (Burm.), *tropicus* (Perch.) = *subcornutus* (Hope), *ecliptieus* (Truq.), *laticornus* (Truq.), *corticicola* (Truq.), *furcilabrus* (Esch.), *assimilis* (Web.) = *semicylindraceus* (Esch.), *cephalotes* (Gerv.) = *sinatus* (Esch.), *platyrhinus* (Hope) = *validus* (Burm.), *transversus* (Dalm.) = *trituberculatus* (Esch.) = *intermedius* and *bifoveicollis* (Dup.), *striatopunctatus* (Perch.), *zodiacus* (Truq.), *cuspidatus* (Truq.), *distinctus* (Web.), and three new species.

Cornelius publishes some observations on the natural history of *Lucanus cervus* from Hauber (Stett. ent. Zeit. 1868, pp. 24–25).

M'Lachlan notices the occurrence of specimens of *Lucanus cervus* in cocoons in the earth (Proc. Ent. Soc. Lond. 1868, p. ix). His statement is confirmed by Eaton and Janson.

Sinodendron cylindricum. T. A. Chapman notices the habits of this species during oviposition. Ent. M. Mag. v. pp. 139–141.

Passalus nikobaricus, sp. n., Redtenbacher, Reise der Novara, Zool. ii. Col. p. 49, Sambelong.

Odontolabis inæqualis, sp. n., Kaup, Col. Hefte, iv. p. 77, and *O. gracilis*, sp. n., Kaup, ibid., from the island of Nias.

Scarabæidæ.

Coprides.

Harold (Col. Hefte, iii. pp. 94–95) remarks as follows upon some of the species of this group described by Redtenbacher in the Coleoptera of the 'Novara's' voyage:—*Chœridium platymerum* (Redt.) = *subæneum* (Blanch.), of which also *C. foveicolle* (Redt.) is the ♀; *Onthophagus ferox* (Erichs. MS.) is described under the same name by Harold; *C. quadripunctatus* (R.) = *corpulentus* (H.); *C. ornatus* (R.) = *thoracicus* (Dej.); *C. lamproderes* (R.) = *compactus* (H.); *Canthon cyanopterus* (R.) = 5-*maculatus* (Cast.); *Copris anceus* (Oliv.) is not a variety of *C. lunaris*.

Copris mormon (Ljungh.) = *Copris ephialtes* (Mann.), and belongs to the genus *Pinotus* (Erichs.): Harold, Stett. ent. Zeit. 1868, p. 119. The ♂ = *C. sexdentatus* (Kirby, MS.), *C. serricollis* (Germ. MS.), *C. nasuta* (Dej.), and *C. exsertus* (Sturm, Cat.). The ♀ = *C. protensa* (Perty), *C. rugifrons* (Dej.), and *C. thersites* (Germ. MS.).

Bates remarks (Col. Hefte, iv. p. 87) that *Scarabæus gigas* (Oliv.) is quite

distinct from *Sc. gigas* (Linn.); the latter he identifies with *Heliocopris isidis* (Lat.). For Olivier's species Bates proposes the name of *Heliocopris colossus* (*l. c.* p. 88).

Bates also remarks upon the following species (*l. c.* pp. 90–91) :—*Phanæus chalcomelas* (Perty), which he thinks is not a South-Brazilian but solely an Amazonian species; *P. lautus* (M'Leay), *P. hilaris* (M'Leay), and *P. silenis* (Cast.), in the descriptions of which he indicates errors.

Kiesenwetter refers to Harold's assertion that *Caccobius histeroides* (Ménétr.) is distinct from *Onth. nigellus* (Ill.), and explains the reason of his having maintained the opposite opinion (Col. Hefte, iv. p. 93).

Ateuchus sacer. Westwood briefly notices the habits of this beetle, as observed by him at Cannes. Proc. Ent. Soc. Lond. 1868, p. xxv.

Harold (Col. Hefte, iv. p. 104) alters the names of the following species on account of their names being preoccupied :—*Ateuchus cicatricosus* (Boh.) to *bohemani*, *Copris scxdentatus* (Redt.) to *sarpedon*, *Onthophagus discolor* (Klug) to *impurus*, *O. minutus* (Motsch.) to *promissus*, and *Drepanocerus setosus* (Boh.) to *sinicus*.

E. von Harold has published a monograph of the American genus *Canthon* (Berl. ent. Zeitschr. 1868, pp. 1–144), in which he includes *Cœloscelis* (Reiche). Of this genus Harold describes 97 species, 45 of which are new. He also indicates 23 species which have been referred to *Canthon* by various authors, but which are unknown to him. Some of these he regards as probably belonging to other genera.

Harold (Col. Hefte, iii. pp. 33–37) discusses the comparative characters of certain genera allied to *Chœridium*, especially *Uroxys* (Westw.), the separation of which from *Chœridium* he regards as best established by the form of the suture between the meso- and metasternum, this being straight in the former genus, whilst in the latter the metasternum forms an acute angle in front which is received into the mesosternum. *Coptodactyla* (Burm.) is a true *Chœridium*. Of the genera admitted by Harold in his group Chœridides (see 'Record,' 1867, p. 250) he gives the following tabular synopsis (*l. c.* pp. 54, 55) :—

I. Corpus plus minusve hirsutum, abdominis segmenta connexa.
  A. Tars. postic. articulus primus sequenti longit. æqualis vel brevior. Pedaridium.
  B. Art. iste sequenti multo longior.
    a. Pygidium contractum, epipleura medio ampliata. Trichillum, g. n.
    b. Pygidium rectum, epipleura non ampliata. . Aphengium.
II. Corpus glabrum, segmenta abdominalia libera.
  A. Tibiæ posticæ transversim carinatæ ..... Scatimus.
  B. Tibiæ posticæ absque carinis transversis.
    a. Mesosternum magnum, a metasterno sutura angulata divisum, oculi majores ..... Uroxys.
    b. Mesosternum breve, metasterni sutura recta vel subarcuata, oculi minuti.
      * Caput triangulare, tarsi antici nulli .... Deltorhinum.
      † Caput semicirculare, tarsi non deficientes.

α. Tibiæ anticæ in utroque sexu scalpriformes.
CHŒRIDIUM.

β. Tibiæ anticæ feminarum oblique truncatæ.
CANTHIDIUM.

Chœridium. Harold also publishes (Col. Hefte, iv. pp. 32–76) a monographic revision of the species of this genus, of which he describes 27 in all. The known species of other authors admitted by him are the following:—*C. pauperatum* (Germ.), *capistratum* (Fab.)=*histeroides* (Web.), *squalidum* (Fab.) =*subæneum* (Blanch.)=*foveicolle* and *platymerum* (Redt.), *vividum* (Germ.), and *simplex* (Gerv.). *Chœridium nitidum, prasinum, cupreum, flavicorne, violaceipenne,* and *viridicolle* (Blanch.) belong to *Canthidium*; *C. dilaticolle* (Blanch.) is a *Uroxys*; *C. latum, viduum,* and *fuscipes* (Blanch.) are probably true *Chœridia,* although the first may be a *Canthidium.* All Lucas's *Chœridia* in Castelnau's voyage are to be referred to *Canthidium. Chœridium fasciatum* and *elegans* (Cast.) belong to *Canthon,* and *C. collare* and *nitidulum* (Cast.) to *Canthidium.*

New genera:—

Trichillum, g. n., Harold, *l. c.* p. 52. (See Table, p. 235.) Sp. *T. heydeni,* sp. n., Harold, *l. c.* p. 53, Brazil.

Boblites, g. n., Harold, Col. Hefte, iv. p. 81. Allied to *Gromphas* (Perty); body flattened, subquadrate; antennæ 9-jointed, club oblong-oval; labial palpi with the first 2 joints dilated, 2 less than 1, 3 minute, subcylindrical; thorax deeply biimpressed in the middle of the base; scutellum 0; elytra with 7 obsolete striæ; metasternum conical in front; anterior tarsi 0; intermediate tibiæ incurved, posterior with the apical margin simple. Sp. *B. onitoides,* sp. n., Harold, *l. c.* p. 81, Montevideo.

Synapsis, g. n., Bates, Col. Hefte, iv. p. 89. Allied to *Heliocopris*; head broadly triangular, genæ prolonged, acute, received in a notch of the thorax; thorax short, unarmed, narrower than elytra, sides bicarinate; elytra 8-striate, carinate between striæ 7 and 8; epipleura broad, bistriate; anterior tibiæ strongly tridentate. Sp. *Copris brahminus* (Hope).

New species:—

Ateuchus fritschi, Harold, Col. Hefte, iii. p. 80, South Africa.

Ateuchus festivus, Harold, Col. Hefte, iv. p. 79, River Niger.

Gymnopleurus thoracicus (Dup. MS.), Harold, *l. c.* p. 79, Upper Egypt.

Canthon. Of this genus Redtenbacher (Reise der Novara, Zool. ii. Col.) describes the following new species:—*C. fulgidus,* p. 51, *C. lamproderes,* ibid., *C. quadripunctatus,* p. 52, pl. 2. fig. 6, *C. puncticollis,* ibid., *C. auricollis,* p. 53, and *C. cyanopterus,* ibid., pl. 2. fig. 9, from Brazil; and *C. ornatus,* ibid., pl. 2. fig. 11, South America.

Canthon. Of this genus Harold describes 45 new species (Berl. ent. Zeitschr. 1868, pp. 11–139).

Canthon gundlachi and *C. histeroides,* Harold, Col. Hefte, iv. p. 80, Cuba.

Deltochilum aberrans, Harold, Berl. ent. Zeitschr. 1868, p. 8, note, Columbia.—*Deltochilum riehli,* Harold, Col. Hefte, iv. p. 79, Brazil.

Epirhinus dentinus (Ill., Dej.) and *E. sculpturatus,* Harold, *l. c.* p. 80, Cape of Good Hope.

Cephalodesmius macleayi, Harold, Col. Hefte, iii. p. 80, Australia; *C. castelnaui,* Harold, ibid., Brisbane.

Uroxys. Harold describes the following new species of this genus:—*U. striatus*, Col. Hefte, iii. p. 41, Brazil; *U. batesi*, *l. c.* p. 43, Pará; *U. elongatus*, *l. c.* p. 44, Quito; *U. minutus*, *l. c.* p. 48, Brazil; *U. metallescens*, *l. c.* p. 49, Columbia; *U. angulatus* (Klug, MS.), *l. c.* p. 50, Brazil; *U. inconspicuus*, *l. c.* p. 51, Montevideo.

Chœridium. Harold describes the following new species of this genus (Col. Hefte, iii.):—*C. robustum*, *l. c.* p. 81 (=*pauperula*, Dej.), Brazil; *C. carbonarium* (Dej.), ibid. (=*pilula*, Sturm, MS.), Brazil; *C. lævicolle*, ibid., Ega; *C. substriatum*, ibid., Tapajos; *C. candezei*, *l. c.* p. 82, Panama; *C. œneomicans*, ibid., S. Paulo; and *C. pygidiale*, ibid., Pará, Tapajos.

Chœridium. Harold (Col. Hefte, iv.) describes the following new species of this genus:—*C. subquadratum* (Klug), *l. c.* p. 39, *C. laterale*, *l. c.* p. 42, *C. breve*, *l. c.* p. 45, Brazil; *C. lecontei*, *l. c.* p. 52, North America; *C. illæsum*, *l. c.* p. 53, Mexico; *C. connexum*, *l. c.* p. 55, Ega; *C. klugi*, *l. c.* p. 56, Mexico; *C. hoplopygum*, *l. c.* p. 57, *C. columbianum*, *l. c.* p. 58, Columbia; *C. murrayi*, *l. c.* p. 67, Amazons; *C. semicribratum* (Dej.), *l. c.* p. 74, Brazil; and *C. calcaratum*, *l. c.* p. 76, Cayenne.

Chœridium platymerum and *C. foveicolle*, Redtenbacher, *l. c.* p. 54, Rio Janeiro.

Aphengium sordidum (Dej.), Harold, *l. c.* p. 82, Montevideo.

Canthidium semicupreum, Harold, Col. Hefte, iv. p. 69, note, Pará; *C. sulcicolle*, Harold, ibid., Cayenne; *C. cereum*, Harold, *l. c.* p. 70, note, Ega.

Copris simplex, Harold, *l. c.* p. 81, Caffraria; *C. latifrons* (Dej.), Harold, ibid., Cape of Good Hope; *C. laïus* (Reiche, MS.), Harold, ibid., West Africa.

Heliocopris andersoni, Bates, Col. Hefte, iv. p. 88, Lake N'Gami; *H. domina*, Bates, ibid., Assam.

Ontherus podiceps, Harold, Col. Hefte, iii. p. 82, Brazil.—*Ontherus digitatus*, Harold, Col. Hefte, iv. p. 80, Brazil; *O. mexicanus*, Harold, ibid., Mexico.

Phanæus bispinus, Bates, *l. c.* p. 89, Ecuador.—*Phanæus prasinus*, Harold, Col. Hefte, iii. p. 83, Venezuela.—*Phanæus batesi*, Harold, Col. Hefte, iv. p. 82, Bolivia; *P. dejeani* (Buq. MS.), Har. ibid., Brazil; *P. hermes* (Dej.), Har. ibid., Columbia; *P. cadmus* (Dej.), Har. ibid., Cayenne.

Dendropemon (sic) *bahianus*, Harold, Col. Hefte, iii. p. 83, Bahia.

Dendropemon (sic) *amyntas* (Dej.), Harold, Col. Hefte, iv. p. 83, Cayenne.

Onitis sulcicollis (Dej.), Harold, *l. c.* p. 83, Senegal; *O. hoplosternus*, Harold, ibid., South Africa.

Onthophagus. Harold (Col. Hefte, iv.) describes the following new species of this genus:—*O. murrayi*, *l. c.* p. 83, Old Calabar; *O. orientalis*, ibid., Hong Kong, Bengal; *O. lunatus*, *l. c.* p. 84, Hong Kong; *O. lobocephalus*, ibid., Mendoza; *O. rhinophyllus* (Germ. MS.), ibid., Venezuela.

Onthophagus ferox, Redtenbacher, *l. c.* p. 56, pl. 2. fig. 7, Swan River; *O. reflexicornis*, Redt. *l. c.* p. 57, Ceylon.—*Onthophagus pugnax*, Harold, Col. Hefte, iii. p. 83, and *O. thoreyi*, Harold, ibid., Australia.

Aphodiides.

Harold changes the name *Chemargus*, given by him to a genus of this group in 1866, to *Mendidius*, as there is already a *Chemargus* (Schönh.). Col. Hefte, iii. p. 86.

Rhyparus. The species referred by Redtenbacher to *R. desjardinsii*

(Westw.) is quite distinct and named *R. redtenbacheri* by Harold, Col. Hefte, iii. p. 95.

Aphodius longitarsus (Redt.) = *tasmanice* (Hope), according to Harold, Col. Hefte, iii. p. 94.

Aphodius scrofa (Fab.). Sharp records its occurrence in Britain. Ent. M. Mag. v. p. 100.

New species :—

Aphodius forcipatus, Harold, Col. Hefte, iii. p. 84, Algeria; *A. centralis*, Harold, ibid., South Africa; *A. kraatzi*, Harold, ibid., Greece, Crete, Sarepta.—*Aphodius candezei*, Harold, Col. Hefte, iv. p. 85, Adelaide.

Aphodius (*Acrossus*) *longitarsus*, Redtenbacher, Reise der Novara, Zool. ii. Col. p. 58, Sydney.

Coptochirus vulgatus, Harold, Col. Hefte, iii. p. 84, *C. excisus*, Harold, *l. c.* p. 85, and *C. brachypterus*, Harold, ibid., South Africa.—*Coptochirus pallidipennis* (Dej.), Harold, Col. Hefte, iv. p. 84, Cape of Good Hope.—*Coptochirus singularis*, Harold, Berl. ent. Zeitschr. 1868, p. 396, Asia Minor and Constantinople.

Ægialia desertorum, Fairmaire, Ann. Soc. Ent. Fr. 4^e^ sér. viii. p. 482, Biskra.

Rhyssemus goudoti (Dej.), Harold, Col. Hefte, iv. p. 85, Madagascar.

Atænius. Of this genus Harold describes the following new species (Col. Hefte, iii.) :—*A. elegans*, *l. c.* p. 85, Brazil; *A. simulator*, ibid., Mendoza; *A. integer*, *l. c.* p. 86, and *A. arenosus*, ibid., Brazil; *A. sculptilis*, ibid., Venezuela; and *A. punctipennis*, ibid., Columbia.—*Atænius purator*, Harold, Col. Hefte, iv. p. 85, Pará; *A. sculptor*, Harold, ibid., Columbia.

Orphnides.

Ochodæus. Leconte (Trans. Amer. Ent. Soc. ii. p. 51) tabulates 10 species of this genus known to him as inhabiting North America; of these the following are new :—*O. opacus*, Kansas; *O. biarmatus*, *complex*, *sparsus*, and *pectoralis*, New Mexico; and *O. duplex*, Texas.

Orphnus hova, Fairmaire, Ann. Soc. Ent. Fr. 4^e^ sér. viii. p. 783, and *O. coquerelii*, Fairm. *l. c.* p. 784, Nossi-Bé.

Ochodæus cannellinus, Fairmaire, *l. c.* p. 785, *O. infuscatus*, Fairm. ibid., and *O. maxillosus*, Fairm. *l. c.* p. 786, Madagascar.

Trogides.

Harold remarks (Col. Hefte, iv. p. 86) that Blanchard has named two species *Trox gemmifer*; for the second of these (Voy. d'Orb. p. 188) he proposes the name of *T. guttifer*.

Trox perrisii, sp. n., Fairmaire, *l. c.* p. 482, Algeria.—*Trox regularis*, sp. n., Harold, Col. Hefte, iv. p. 85, Java; *T. chevrolati*, sp. n., Harold, *l. c.* p. 86, Cuba.

Geotrupides.

Horn has published (Trans. Amer. Ent. Soc. i. pp. 313–322) an analysis of the North-American species of *Geotrupes*, founded upon Jekel's treatise on that genus. Of the subgenera admitted by Jekel (see 'Record,' 1866,

pp. 328–329), *Onychotrupes*, *Cnemotrupes*, and *Anoplotrupes* are represented in the United States; and Horn accepts further the subgenus *Mycotrupes* (Leconte) as a form intermediate between *Chelotrupes* (Jek.) and *Thorectes* (Muls.). The organic peculiarities by which these subgenera are characterized are illustrated by Horn in a series of outline figures (*l. c.* pp. 321–322). Horn recognizes the following distinct North-American species:—(*Mycotrupes*) *G. retusus* (Lec.): (*Onychotrupes*) *G. splendidus* (Fab.), of which *miarophagus* (Jek.) is a variety; *G. semiopacus* (Jek.), of which *melsheimeri* (Jek.) is a var.: (*Cnemotrupes*) *G. egeriei* (Germ.), with *l[illegible]ei* (Jek.) as a variety; *G. opacus* (Hald.), vars. *haldemani* and *chevrolati* (Jek.); *G. blackburnii* (Fab.)=*excrementi* (Say); *G. conicollis* (Jek.): (*Anoplotrupes*) *G. balyi* (Jek.), vars. *similis* and *starkii* (Jek.). *G. starkii* was referred by Jekel to *Cnemotrupes*; but Horn regards it as identical with *balyi*.

Bolboceras tetraodon, Redtenbacher, Reise der Novara, Zool. ii. Col. p. 59, pl. 2. fig. 8, and *B. mundus*, Redt. *l. c.* p. 60, Chili.

Glaphyrides.

Glaphyrus modestus (Kies.). According to Bethe (Stett. ent. Zeit. 1868, p. 166) only the ♀ of this species has the prothorax nearly smooth at the base; in the ♂ the prothorax is uniformly punctured almost throughout.

Cratoscelis striolata, sp. n., Redtenbacher, Reise der Novara, Zool. ii. Col. p. 61, Chili.

Rutelides.

S. Lockwood describes the habits of *Cotalpa lanigera*, the Goldsmith Beetle of the United States (Amer. Natural. ii. pp. 186–192). The larva and imago are figured (*l. c.* p. 187, figs. 1 & 2), and the pupa of *Lachnosterna fusca* (ibid. fig. 3). See also *l. c.* pp. 441–442.

Burmeisteria, g. n., Schickendantz, Trans. Ent. Soc. Lond. 1868, p. 101. Allied to *Macrophylla* and *Pachypus*, but with the elytra much narrowed behind and gaping, and the metanotum produced behind into a long triangular process. Sp. *B. mirabilis*, sp. n., Schick. *l. c.* p. 101, pl. 7, Catamarca.

New species:—

Anomala? contermina, Walker, in 'Lord's Nat. in Vancouver's Isl.' p. 321, Vancouver's Island.

Anomala cavifrons, Leconte, Trans. Amer. Ent. Soc. ii. p. 52, Smoky-Hill River.

Phyllopertha chinensis, Redtenbacher, Reise der Novara, Zool. ii. Col. p. 70, pl. 2. fig. 3, Hong Kong.

Popilia nietneri, Redtenbacher, *l. c.* p. 72, pl. 3. fig. 4, Ceylon.

Anoplognathus æneus, C. O. Waterhouse, Ent. M. Mag. v. p. 8, Rockingham Bay, Australia.

Calloodes atkinsonii, C. O. Waterhouse, *l. c.* p. 9, Rockingham Bay, Australia.

Parastasia coquerelii, Fairmaire, Ann. Soc. Ent. Fr. 4e sér. viii. p. 780, Seychelles.

Melolonthides.

Melolontha vulgaris. A note on the industrial purposes to which this

insect may be applied is republished, from the 'Revue hebdomadaire de Chimie,' in Rev. et Mag. de Zool. 1868, pp. 473–474.

Lachnosterna quercina. On the habits of this species, see Walsh, Pract. Entom. i. pp. 60–62.

Monochelus binotatus (Thumb.) and *Lepisia rupicola* (Fab.). Redtenbacher (Reise der Novara, Zool. ii. Col. p. 62) notices some variations of these species.

Ectinchoplia, g. n., Redtenbacher, Reise der Novara, Zool. ii. Col. p. 63. Allied to *Hoplia,* but more elongated, and with very long legs; claws all cleft at apex, subequal on anterior and intermediate feet. Sp. *E. sulphuriventris* (Dohrn, MS.), Redt. *l. c.* p. 63, pl. 2. fig. 10, Hong Kong.

Ptyophis, g. n., Redtenbacher, *l. c.* p. 69. Intermediate between the *Macrophyllides* and *Pachypodides,* having long leaves in the antennal club, and the maxillary lobe minute and edentate. Sp. *P. macrophylla,* sp. n., Redt. *l. c.* p. 70, pl. 3. fig. 2, Chili.

New species:—

Serica umbrosa, Fairmaire, Ann. Soc. Ent. Fr. 4e ser. viii. p. 787, Madagascar.—*Serica nicobarensis,* Redtenbacher, *l. c.* p. 64, Nicobars.

Serica crassata, Walker, in 'Lord's Nat. in Vancouver's Isl.' p. 323, Vancouver's Island.

Ablabera lævigata, Fairmaire, *l. c.* p. 788, Madagascar; *A. gracilis,* Fairm. *l. c.* p. 789, Comores.

Phytolæma claphoccra, Redtenbacher, *l. c.* p. 65, pl. 3. fig. 1, Chili.

Pachydema nicobarica, Redtenbacher, *l. c.* p. 66, Sambelong.

Pachydema marmottani, Fairmaire, *l. c.* p. 478, Biskra; *P. cartereaui,* Fairm. *l. c.* p. 479, Sahara of Algeria.

Rhizotrogus olcesii, Fairmaire, *l. c.* p. 480, Morocco; *R. holoxanthus,* Fairm. ibid., Algerian Sahara; *R. lævisculatus,* Fairm. *l. c.* p. 481, Bone.

Rhizotrogus collocatus, Walker, *l. c.* p. 321, Vancouver's Island.

Ancylonycha nigropicea, Walker, *l. c.* p. 322, *A. consequens,* Walker, ibid., and *A. uninotata,* Walker, p. 323, Vancouver's Island.

Ancylonycha (*Holotrichia*) *nigra,* Redtenbacher, *l. c.* p. 67, Hong Kong.

Schizonycha auriculata, Redtenbacher, *l. c.* p. 68, Java.

Leucopholis (*Lepidiota*) *manillæ,* Redtenbacher, *l. c.* p. 69, Manilla.

Pachycolus dohrnii, Fairmaire, *l. c.* p. 788, Madagascar.

Anoxia cingulata, Marseul, L'Abeille, v. p. 173, Beyrout.

Dynastides.

Temnorhynchus. Fairmaire (Ann. Soc. Ent. Fr. 4e sér. viii. pp. 791–797) describes the species of this genus, of which he admits 11, five described as new. The previously known species are:—1. *T.* (*Geotr.*) *coronatus* (Fab.); 2. *T.* (*Scarab.*) *diana* (Pal.-B.); 3. *T.* (*Geotr.*) *retusus* (Fab.); 4. *T. baal* (Reiche); 5. *T.* (*Geotr.*) *truncatus* (Klug); 6. *T. repandus* (Burm.).

Myrina, g. n., Redtenbacher, Reise der Novara, Zool. ii. Col. p. 78. Allied to *Licomedes,* but the mandibles simple, and the prosternum with a posterior lobe. Sp. *M. pfeifferi,* sp. n., Redt. *l. c.* p. 79, pl. 3. fig. 5, Borneo.

New species:—

Temnorhynchus. Of this genus Fairmaire describes the following new

species:—*T. sennariensis*, *l. c.* p. 792, Sennaar; *T. agysimbanus* (Coq. MS.) *l. c.* p. 793, Zanzibar; *T. luna*, *l. c.* p. 794, Senegambia; *T. antiochus*, *l. c.* p. 795, Zanzibar; *T. coquerelii*, *l. c.* p. 796, Madagascar.

Heteronychus lioderes, Redtenbacher, *l. c.* p. 75, Java.

Oryctomorphus fairmairi, Redtenbacher, *l. c.* p. 76, pl. 3. fig. 6, Chili.

Cetoniides.

Wallace has published (Trans. Ent. Soc. Lond. 3rd ser. iv. pp. 519–601) a valuable catalogue of the known species of this group from the Malasian region. He indicates the progress of our knowledge of the Malasian Cetoniides as follows:—Gory and Percheron knew 45 species, Burmeister records 60, the British Museum "List" 74, and Lacordaire gives 85. Twenty-eight species have since been described by Thomson, Vollenhoven, and others; and the species described by Wallace in the present paper (diagnoses of which were published last year in Proc. Ent. Soc. 1867, pp. xcii–xcvii; see 'Record,' 1867, pp. 256, 257) bring the total number to 181. Wallace remarks that "the number of species found in any one locality seems to be influenced, first by proximity to the continent, and next by the mass of the island." Thus the peninsula of Malacca, though imperfectly explored, has 44 species, and Java only 46. The Philippines have only 32 species, Celebes 19, Ceram and Amboyna 11, the Aru Islands 9, and New Guinea only 12. He adds that the same diminution is apparent if we take the two great regions (Indian and Australian) into which he divides the archipelago,—the Indian region, including Java, Borneo, and the Philippines, having 114 species; while the Australian, extending from Celebes to the Solomon Islands, has only 70. This distribution is shown in an elaborate tabular view at the end of the paper. Of the genera a larger proportion is common to the two great regions; but even here Wallace finds evidence in favour of his views. Thus 9 genera, namely, *Mycteristis*, *Agestrata*, *Clerota*, *Plectrone*, *Chalcothea*, *Centrognathus*, *Rhagopteryx*, *Macroma*, and *Euremina*, are peculiar to the Indian region; and 2 others, *Heterorhina* and *Clinteria*, are scarcely represented beyond it. Three genera, *Schizorhina*, *Anacamptorhina*, and *Sternoplus*, are confined to the Australian region, and *Lomaptera* nearly so. Wallace figures the following species (*l. c.* plates 11–14):—

Heterorhina *borneensis*, pl. 11. fig. 2; *H. mitrata*, pl. 11. fig. 1; *H. modesta*, pl. 11. fig. 3; Clinteria *flora*, pl. 11. fig. 4; Lomaptera *striata*, pl. 11. fig. 8; *L. concinna*, pl. 12. fig. 1; *L. inermis*, pl. 12. fig. 2; Plectrone *tristis* (Westw.), pl. 13. fig. 1; Macronota *celebensis*, pl. 11. fig. 5; *M. castanea*, pl. 11. fig. 6; *M. variegata*, pl. 12. fig. 7; *M. cervina*, pl. 11. fig. 7; *M. thoracia*, pl. 12. fig. 3; *M. mouhotii*, pl. 12. fig. 4; *M. marmorata*, pl. 12. fig. 5; *M. annæ*, pl. 12. fig. 6; Anacamptorhina *fulgida*, pl. 13. fig. 2; Euryomia *raja*, pl. 13. fig. 6; *E. rustica*, pl. 13. fig. 7; *E. trivittata*, pl. 12. fig. 8;

E. cincta, pl. 13. figs. 3, 4; *E. bella*, pl. 13. fig. 5; *E. celebensis*, pl. 13. fig. 8; *E. lateralis*, pl. 13. fig. 9; *E. bowringii*, pl. 14. fig. 5; *E. incerta*, pl. 14. figs. 1, 2; *E. fulvipicta*, pl. 14. fig. 6; *E. cretata*, pl. 14. fig. 4; *E. aromatica*, pl. 14. fig. 3; Cetonia *ciocolatina*, pl. 14. fig. 8; *C. celebica*, pl. 14. fig. 7; and Euremina *agnella*, pl. 14. fig. 9.

Dohrn (Stett. ent. Zeit. 1868, pp. 233–243) refers to various species of this group from the district of Hereró in South Africa, namely, *Oxythyrea hæmorrhoidalis* (Fab.), variations, to which he refers *Cetonia amethystina* and *dysenterica* (M'Leay), *C. nitidula* (Oliv.), ? *Oxythyrea vitticollis* (Boh.), ? *O. niveoguttata* (Blanch.), ? *O. discicollis* (Blanch.); *Oxythyrea amabilis* (Schaum), variations; *Cetonia fimbriata* (Thunb.); *Cetonia flaviventris* (Gory). Dohrn describes a species as new under the name of *Tephræa anceps* (*l. c.* p. 240), but subsequently (*l. c.* p. 243) identifies it with *T. napæa* (Boh.).

Boisduval having placed a female of *Cotenia morio*, sent to him from Nice, in his room, the windows of which were opened at night, found ♂ individuals of the species in the room several mornings successively. The insect appears to be rare in the neighbourhood of Paris. Bull. Soc. Ent. Fr. 1868, p. lxv.

Trichius mandarinus, sp. n., Redtenbacher, Reise der Novara, Zool. ii. Col. p. 82, pl. 3. fig. 7, North China.

Cremastocheilus armatus, sp. n., Walker, Lord's Naturalist in Vancouver's Island, &c. ii. p. 320, Vancouver's Island.

Buprestidæ.

E. Saunders has published (Trans. Ent. Soc. Lond. 1868, pp. 1–67) a revision of the Australian species of this family described by Hope. In this revision, as we learn from a note (p. 2), he has treated those of Hope's descriptions which were printed only for private circulation as unpublished; and regarding his names in the light of mere MS. names, has placed them as synonyms of species described subsequently by other authors. It must be admitted that from the liberal manner in which Hope's unpublished descriptive catalogues were distributed at the time of their preparation, and the general acceptance they met with from entomologists both in this country and abroad, there is great difficulty in determining the light in which they are to be regarded; for, following out his own principle, Saunders might in this case claim to be the original describer of all those species named by Hope in his pamphlet on Buprestidæ which have not been described by other authors. This case may serve as an additional illustration, if any were wanting, of the extreme absurdity of printing scientific descriptions for private circulation. Under any circumstances Saunders has done good service by determining the synonymy of so large a number of species, most of which are here described by him in detail, and nearly all of them illustrated by figures. The species are:—

Cyria *imperialis* (Fab.) = *australis* (Boisd.) = *imperialis* and *gagates* (Hope), pl. 1. figs. 1 & 2; *C. vittigera* (Hope), p. 3, pl. 1. fig. 3: Diadoxus (H. Deyr. MS.) *erythrurus* (White) = *Anthaxia pistacina* (Hope), p. 4, pl. 1. fig. 5;

D. scalaris (Lap. & Gory)=*Anth. erichsoni* (Hope), p. 4, pl. 1. fig. 4: Chrysodema *gigas* (Hope), p. 5, pl. 1. fig. 6: Chalcotænia (*Bupr.*) *albivittis* (Hope), p. 6, pl. 1. fig. 7; *C.* (*Evides*?) *lambertii* (Hope, Lap. & G.), p. 7, pl. 1. fig. 8: Cyphogastra *farinosa* (Fab.), pl. 1. fig. 9; Prospheres (*Bupr.*) *aurantiopicta* (Lap. & G.)=*Ancyl.*? *decostigma* (Hope), p. 7, pl. 4. fig. 6: Nascio (*Agr.*) *xanthura* (Hope, L. & G.), p. 8, pl. 1. fig. 10; *N.* (*Stigm.*) *parryi* (Hope)=*saundersi* (Hope), p. 9, pl. 1. fig. 11: Asthræus (*Stigm.*) *samouelli* (Hope), p. 10, pl. 1. fig. 12: Euryspilus (*Agr.*) *chalcodes* (Hope, L. &. G.), p. 11, pl. 1. fig. 13: Cinyra (*Cisseis*) *spilota* (Hope), p. 11, pl. 4. fig. 32: Plagiope (H. Deyr. MS.) (*Bupr.*) *chrysochloris* (Hope, L. & G.), p. 12, pl. 1. fig. 22; *P.* (*B.*) *euprifera* (Kirby, Hope), p. 13, pl. 1. fig. 23: Melobasis (*Bupr.*) *pyritosa* (Hope), p. 13, pl. 1. fig. 14; *M.* (*B.*) *gloriosa* (Hope), p. 14, pl. 1. fig. 15; *M.* (*B.*) *splendida* (Don.); *M.* (*Anth.*) *superba* (Hope, L. & G.), p. 14, pl. 1. fig. 15 *a*; *M.* (*B.*) *cuprieeps* (Kirby)=*viridinitens* (Boisd.)=*iridescens* (Hope), pl. 1. fig. 16; *M.* (*B.*) *propinqua* (Hope, L. & G.) =*porteri* (Hope), p. 15, pl. 1. fig. 17; *M.* (*B.*) *metallifera* (Hope), p. 16, pl. 1. fig. 18; *M.* (*B.*) *verna* (Hope), p. 17, pl. 1. fig. 19; *M.* (*B.*) *lathami* (Hope, L. & G.)=*serrulata* (Hope), p. 17, pl. 1. fig. 20; *M.* (*B.*) *nervosa* (Boisd.), pl. 1. fig. 21; Merimna (H. Deyr. MS.) (*Belionota*?) *atrata* (Hope, L. & G.), p. 18, pl. 4. fig. 13: Anilara (H. Deyr. MS.) (*Anth.*) *adelaidæ* (Hope), p. 19, pl. 4. fig. 12: Neocuris (H. Deyr. MS.) (*Anth.*) *fortnumi* (Hope), p. 19, pl. 4. fig. 10; *N.* (*Stigm.*) *guerinii* (Hope), p. 20, pl. 4. fig. 11: Curis (*Bupr.*) *caloptera* (Boisd., L. & G.)=*Anth. dives* (Hope), pl. 4. fig. 7; *C.* (*Anth.*) *aurifera* (Hope, L. & G.), p. 21, pl. 4. fig. 8: Castalia (*Bupr.*) *bimaculata* (Oliv.), pl. 1. fig. 24: Calodema (*Stigm.*) *regalis* (L. & G.)= *S. kirbii* (Hope), p. 22, pl. 4. fig. 9: Stigmodera (*Bupr.*) *macularia* (Don.), pl. 1. fig. 25; *S. gorii* (Hope)=*goryi* (L. & G.)=*curtisii* (Hope), p. 23, pl. 1. fig. 26; *S. sanguinosa* (Hope), p. 24, pl. 1. fig. 27; *S. roei* (Hope)=*cancellata* (L. & G. nec Don.), p. 24, pl. 2. fig. 2; *S.* (*Bupr.*) *eanecllata* (Don., Hope)= *dejeaniana* (Boisd.)=*dejeanii* (Hope), pl. 2. fig. 1; *Stigmodera gratiosa* (Chevr.)=*smaragdina* (Hope), pl. 2. fig. 3; *S. parryi* (Hope), p. 25, pl. 2. fig. 5; *S. flavocincta* (Hope, L. & G.), p. 26, pl. 2. fig. 5; *S.* (*Bupr.*) *grandis* (Don., Hope, L. & G.), pl. 2. fig. 6; *S.* (*B.*) *limbata* (Don., Hope, nec L. & G.), pl. 2. fig. 7; *S.* (*B.*) *suturalis* (Don., Hope, L. & G.), pl. 2. fig. 8; *S. fortnumi* (Hope), pl. 2. fig. 9; *S. mitchellii* (Hope)=*S. stricklandi* (Hope), p. 28, pl. 2. fig. 10; *S.* (*Bupr.*) *variabilis* (Don., Hope, L. & G.)=*nigripennis* (Hope), =*B. kingii* (M'L.)=*unifasciata* (Hope), pl. 2. figs. 11, 12; *S. sanguinipennis* (Hope, L. & G.), p. 29, pl. 2. fig. 13; *S. hæmatica* (Hope), p. 29, pl. 2. fig. 14; *S. spencii* (Hope, L. & G.)=*Temnognatha egregia* (Boh.), p. 30, pl. 2. fig. 15; *S. signaticollis* (Hope)=*conspicillata* (White), p. 30, pl. 2. fig. 16; *S. cyanura* (Hope)=var. *conspicillata* (White), p. 31, pl. 2. fig. 17; *S. yarrellii* (Hope, L. & G.)=*flavipennis* and *elegans* (Gehin), p. 32, pl. 2. fig. 18; *S. semicincta* (Hope, L. & G.), p. 33, pl. 2. fig. 19; *S.* (*Bupr.*) *undulata* (Don., Hope, L. & G.), pl. 2. fig. 20; *S. erucnta* (Hope, L. & G.), p. 34, pl. 2. fig. 21; *S. klugii* (Hope, L. & G.), p. 34, pl. 2. fig. 22; *S. amabilis* (Hope, L. & G.), p. 35, pl. 3. fig. 1; *S.* (*Bupr.*) *erythromelas* (Boisd., Hope, L. & G.), pl. 3. fig. 2; *S. hoffmanseggii* (Hope), p. 36, pl. 3. fig. 3; *S. australasiæ* (L. & G.)=*simulata* (Hope), p. 37, pl. 3. fig. 4; *S. simulata* (L. & G. nec Hope)=*helenæ* (Hope p. 37, pl. 3. fig 5; *S. burchellii* (L. & G. nec Hope)=*B. perplexa* and *lanuginosa* (Hope), p. 38, pl. 3. fig. 6; *S. hopei*, Saund. *l. c.* p. 39, pl. 3. fig. 7=

burchellii (Hope, nec L. & G.); *S. anchoralis* (Hope, L. & G.), p. 39, pl. 3. fig. 8; *S. delectabilis* (Hope), p. 40, pl. 3. fig. 9; *S. iospilota* (Hope, L. & G.), p. 41, pl. 3. fig. 10; *S.* (*Bupr.*) *crenata* (Don., Hope); *S. plagiata* (L. & G.) = *crenata* (L. & G. nec Don.) = *bicruciata* (Hope) = *Castiarina hopei* and *similata* (Boh.), p. 42, pl. 3. fig. 11; *S. andersoni* (Hope, L. & G.), p. 42, pl. 3. fig. 12; *S.* (*Bupr.*) *phœorrhœa* (Kirby), pl. 3. fig. 13; *S. vicina* (Hope) = *bicincta* (Hope, L. & G., nec Boisd.), p. 43, pl. 3. fig. 15; *S.* (*Bupr.*) *bicincta* (Boisd., L. & G.) = *bicingulata* (Hope, L. & G.), pl. 3. fig. 14; *S.* (*B.*) *cyanicollis* (Boisd.) = *subtrifasciata* (Hope, L. & G.) = *media* (Hope) = *rubrocincta* (Gehin), pl. 3. fig. 17; *S.* (*B.*) *scalaris* (Boisd.) = *crucigera* (Hope, L. & G.), pl. 3. fig. 18; *S. vegeta* (Hope), p. 45, pl. 3. fig. 19; *S.* (*B.*) *amphichroa* (Boisd.) = 6-*spilota* (Hope, L. & G.), pl. 3. fig. 20; *S. sieboldi* (Hope, L. & G.), p. 45, pl. 3. fig. 21; *S.* (*B.*) *kirbyi* (Guér., L. & G., nec Hope) = *vivida* (Hope), pl. 3. fig. 22; *S. octospilota* (L. & G.) = *femorata* (L. & G.) = *adelaidæ* (Hope), pl. 3. fig. 23; *S* (*B.*) 10-*maculata* (Kirby, Hope, L. & G.), pl. 3. fig. 24; *S. picta* (L. & G.) = *purpurea* (Hope), pl. 3. fig. 25; *S. assimilis* (Hope), p. 47, pl. 3. fig. 26; *S. trifasciata* (L. & G.) = *apicalis* (Hope, L. & G.), p. 47, pl. 3. fig. 27; *S. spilota* (Hope, L. & G.), p. 48, pl. 3. fig. 28; *S.* (*B.*) *flavopicta* (Boisd.) = *bicolor* (L. & G.) = *colorata* (Hope), pl. 3. fig. 29; *S. xanthospila* (Hope) = *parallela* (White) = ?*splendida* (Gehin), p. 49, pl. 3. fig. 30; *S. consanguinea*, Saund. *l. c.* p. 49, pl. 4. fig. 1 = *crocicolor* (Hope nec L. & G.); *S. pertii* (Hope, L. & G.), p. 50, pl. 4. fig. 1 *a*; *S.* (*Conognatha*) *coccinata* (Hope), p. 51, pl. 4. fig. 2; *S.* (*Con.*) *bremei* (Hope), p. 52, pl. 4. fig. 3; *S. hilaris* (Hope), p. 52, pl. 4. fig. 4; *S.* (*Bupr.*) *rufipennis* (Kirby, Hope, L. & G.) = *crocipennis* (Hope, L. & G.), pl. 4. fig. 5 : Xyroscelis (H. Deyr. MS.), (*Amorphosoma*) *crocata* (L. & G.) = *Acmæod. nodosa* and *melanosticta* (Hope), pl. 4. fig. 15: Chrysobothris *australasiæ* (Hope), p. 54, pl. 4. fig. 14; Ethon (*Diphucrania*) *roei* (Hope), p. 54, pl. 4. fig. 16; *E.* (*D.*) *subfasciatum* (Hope), p. 55, pl. 4. fig. 17; *E. affine* (L. & G.) = *Diphucr. auriflua* and *purpurascens* (Hope) = *E. proximum* (Boh.), p. 56, pl. 4. fig. 18; *E.* (*Bupr.*) *fissiceps* (Kirby, Hope) = *viride* (L. & G.), pl. 4. fig. 19; Cisseis (*Bupr.*) *leucosticta* (Kirby, Hope, L. & G.), pl. 4. fig. 20; *C.* (*Ethon*) *signaticollis* (Hope), p. 57, pl. 4. fig. 21; *C.* (*Bupr.*) 12-*guttata* (Guér., L. & G.) = *Diphucr. xanthosticta* (Hope), and *C.* 14-*notata* (Hope), pl. 4. fig. 22; *C.* (*Eth.*) *cupreicollis* (Hope) = *E. æneicolle* (Hope), p. 58, pl. 4. fig. 23; *C.* (*Eth.*) *gouldii*, p. 58, pl. 4. fig. 24; *C. similis*, Saund. *l. c.* p. 59, pl. 4. fig. 25 = *Bupr. irrorata* (Hope, nec L. & G.); *C.* (*Diphucr.*) *suturalis* (Hope), p. 60, pl. 4. fig. 26; *C.* (*Trachys*) *aeuducta* (Kirby) = *Diphucr. lata* and *ænea* (Hope) = *C. marmorata* (L. & G.), p. 60, pl. 4. fig. 27; *C.* (*Eth.*) *roseocuprea* (Hope), p. 61, pl. 4. fig. 28; Agrilus *hypoleucus* (Hope, L. & G.) = *purpuratus* (Hope) = *assimilis* (Hope), p. 62, pl. 4. fig. 29; *A. aurovittatus* (Hope), p. 63, pl. 4. fig. 30; Paracephala (H. Deyr. MS.) (*Agrilus*) *pistacina* (Hope), p. 63, pl. 4. fig. 31. The following species, described by Hope, are unknown to Saunders:—*Buprestis subcyanea*, probably a *Melobasis*; *Anthaxia affinis*, probably a *Melobasis*; *Diphucrania abdominalis*, probably a *Cisseis*; *Stigmodera* (*Bupr.*) *tricolor* (Kirby, Hope); and *Buprestis lapidosa* (M'L., Hope), perhaps a *Melobasis*.

Murray (Ann. & Mag. Nat. Hist. 4th ser. ii. pl. 8) figures the following described species:—*Belionota championi* (Murr.), fig. 4; *Psiloptera piperata* (Murr.), fig. 7; and *Chrysodema chrysochlora* (Pal. B.), fig. 6.

Chrysochroa mniszechii. Examples of this species, taken by Germain on the Island of Pulo-Condor, off the mouth of the Maykang River, have the yellowish band traversing the elytra behind the middle much broader than the continental specimens. Lucas, Bull. Soc. Ent. Fr. 1868, p. ciii.

Sphenoptera gemellata (Dej.) has proved very injurious to the saintfoin near Montpellier. Lichtenstein, Bull. Soc. Ent. Fr. 1868, p. lxxxi.

Chrysobothris femorata (Fab.). On the habits of this species, see Walsh, Pract. Entom. i. p. 26.

Trachys troglodytes (Schönh.). Sharp records its occurrence in Dumfriesshire. Ent. M. Mag. v. p. 100.

Mychommatus, g. n., Murray, Ann. & Mag. Nat. Hist. 4th ser. ii. p. 110. Resembling *Stenogaster*, but with lamellæ on all the tarsi. Sp. *M. cyaneus*, sp n., Murray, *l. c.* p. 110, pl. 8. fig. 3, Old Calabar.

New species :—

Stigmodera. E. Saunders (Journ. Linn. Soc. Zool. ix.) describes and figures the following fifty new Australian species of this genus:—*S. mniszechii* (sic), p. 460, pl. 9. fig. 1, N.W. Australia; *S. bonvouloirii*, ibid., fig. 2, N. Australia; *S. sanguinecocincta*, p. 461, fig. 3, N. Australia; *S. affinis*, ibid. fig. 4 (=*limbata*, Lap. & Gory, nec Don.), N. S. Wales; *S. lobicollis*, p. 462, fig. 5; *S. jansonii*, ibid. fig. 6; *S. similis*, p. 463, fig. 7, Queensland; *S. bifasciata*, ibid., fig. 8, Swan River; *S. pascoei*, ibid., fig. 9; *S. westwoodii*, p. 464, fig. 10, N. Australia; *S. thoracica*, ibid., fig. 11; *S. sanguiniventris*, p. 465, fig. 12; *S. sexmaculata*, p. 465, fig. 13; *S. lævicollis*, p. 466, fig. 14; *S. punctatostriata*, ibid., fig. 15, Swan River; *S. curta*, p. 467, fig. 16; *S. abdominalis*, ibid., fig. 17; *S. jekelii*, ibid., fig. 18, Adelaide; *S. semisuturalis*, p. 468, fig. 19; *S. cyanipes*, ibid., fig. 20, Adelaide; *S. marginicollis*, p. 469, pl. 10. fig. 21, N. S. Wales; *S. gibbicollis*, p. 470, fig. 22, Adelaide; *S. cupricollis*, ibid., fig. 23; *S. costata*, ibid., fig. 24, N. S. Wales; *S. pictipennis*, p. 471, fig. 25, Swan River; *S. rectifasciata*, p. 472, fig. 26; *S. octomaculata* (Reiche, MS.), ibid., fig. 27, Adelaide; *S. æneicornis*, ibid., fig. 28, N. S. Wales; *S. crux*, p. 473, fig. 29; *S. distincta*, ibid., fig. 30; *S. piliventris*, p. 474, fig. 31, Queensland; *S. carminea* (H. Deyr. MS.), ibid., fig. 32, N. S. Wales; *S. obscuripennis*, p. 475, fig. 33, Swan River; *S. cupricauda*, ibid., fig. 34, N. S. Wales; *S. cylindracea*, p. 476, fig. 35, N. S. Wales; *S. wilsoni* (H. Deyr. MS.), ibid., fig. 36; *S. inconspicua*, ibid., fig. 37; *S. thomsoni*, p. 477, fig. 38; *S. 4-fasciata*, ibid., fig. 39; *S. vittata* (H. Deyr. MS.), p. 478, fig. 40, Adelaide; *S. lutecincta*, ibid., fig. 41; *S. mimus*, p. 479, fig. 42, Queensland; *S. subbifasciata*, ibid., fig. 43; *S. amplipennis*, p. 480, fig. 44; *S. maculipennis*, ibid., fig. 45, N. S. Wales; *S. elongata*, ibid., fig. 46, Swan River; *S. jucunda*, p. 481, fig. 47; *S. bimaculata*, ibid., fig. 48, N.W. Australia; *S. trimaculata*, p. 482, fig. 49, N. W. Australia; and *S. producta*, ibid., fig. 50, W. Australia.

Gyascutus cuneatus, Horn, Trans. Amer. Ent. Soc. ii. p. 133, California.

Melanophila marmottani, Fairmaire, Ann. Soc. Ent. Fr. 4e sér. viii. p. 483, Biskra.

Psiloptera nattereri and *P. argyrosticta*, Redtenbacher, Reise der Novara, Zool. ii. Col. p. 84, pl. 3. figs. 8 & 9, Brazil.

Ancylochira ornata, Walker, Lord's Naturalist in Vancouver's Island &c. ii. p. 324, Vancouver's Island.

Corœbus nodifrons, Murray, Ann. & Mag. Nat. Hist. 4th ser. ii. p. 105, and *C.* (*Polyonychus*) *sophoroides*, Murray, *l. c.* p. 106, Old Calabar.

Agrilus. Murray describes the following new species from Old Calabar:—*A. ignicollis*, *l. c.* p. 107, pl. 8. fig. 1; *A. bonvouloirii*, *l. c.* p. 108; *A. capensis*, *l. c.* p. 108; and *A. saundersii*, *l. c.* p. 109, pl. 8. fig. 2.

Agrilus viridi-cœrulans, Marseul, L'Abeille, v. p. 175, Beyrout.

Melobasis dilatata, Redtenbacher, *l. c.* p. 85, Sidney.

Anthaxia rugifera, Redtenbacher, *l. c.* p. 88, Chili.

Anthaxia helvetica, Stierlin, Mitth. schw. ent. Gesellsch. ii. p. 345, Engadine and Monte Rosa.

Aphanisticus marseuli, Tournier, L'Abeille, v. p. 144, Egypt.

Trachys barnevillei, Tournier, L'Abeille, v. p. 145, Algeria.

Throscidæ.

Pactopus, g. n., Leconte, Trans. Amer. Ent. Soc. ii. p. 63. Allied to *Throscus*; antennæ fusiform; hind tarsi received in grooves of segments 1–3 of abdomen. Sp. *P. hornii*, sp. n., Leconte, *l. c.* p. 64, California.

Throscus validus and *T. sericeus*, sp. n., Leconte, Trans. Amer. Ent. Soc. ii. p. 63, California.

Throscus dohrnii, sp. n., Bethe, Stett. ent. Zeit. 1868, p. 36, Sarepta.

Eucnemidæ.

Melasis flabellicornis. According to Berce, the ♀ never quits her gallery; she places the extremity of her body at the orifice, and the male remains outside during copulation. Bull. Soc. Ent. Fr. 1868, p. xlix.

Oisocerus, g. n. (De Bonv.), Murray, Ann. & Mag. Nat. Hist. 4th ser. ii. p. 103. Allied to *Phlegon*; antennæ flabellate; penultimate joint of tarsi simple. Sp. *O. murrayi* (Bonv.), Murray, *l. c.* p. 104, pl. 8. fig. 5, Old Calabar.

Pterotarsus quadrivittatus, sp. n., Redtenbacher, Reise der Novara, Zool. ii. Col. p. 89, pl. 3. fig. 10, Rio de Janeiro.

Galba tuberculata, sp. n., Redtenbacher, *l. c.* p. 90, Amboyna.

Dendrocharis bicolor, sp. n., Redtenbacher, *l. c.* p. 90, Borneo.

Fornax (*Onychodon*) *nietneri*, sp. n., Redtenbacher, *l. c.* p. 91, Ceylon; *F.* (*O.*) *tumidicollis*, sp. n., Redt. *l. c.* p. 92, Java.

Elateridæ.

Many species of this family from Old Calabar are enumerated and remarked upon by Murray, Ann. & Mag. Nat. Hist. 4th ser. ii. pp. 95–103.

On the habits of Wire-worms, see Walsh, Pract. Entom. ii. pp. 61–62.

G. A. Perkins (Amer. Natural. ii. pp. 422–433) gives an account of his observations on numerous specimens of *Elater noctilucus* in confinement. The insect is figured p. 422.

Murray (Journ. Linn. Soc. Zool. x. pp. 74–82, pl. 1. figs. 1–7) describes and figures a luminous larva from Rio de Janeiro, the parentage of which is uncertain. He proposes for it the provisional name of *Astraptor illuminator*. It is corneous above, and pergamentaceous below, depressed, and in many respects unlike the larvæ either of the present family or of the Lampyrides; but in the form of the head and mouth Murray considers that it comes

nearest to the former. He also remarks upon its resemblance to the larvæ of certain Elateriform Heteromera, such as *Serropalpus* and *Dircæa*. The larva is described as showing a red light from the head and a series of white lights on each side of the body-segments, the latter shining by flashes. Murray also figures the larva of *Alaus oculatus* (*l. c.* pl. 1. fig. 8).

Cryptohypnus sabulicola (Boh.). Sharp records its occurrence in Dumfriesshire. Ent. M. Mag. v. p. 100.

Cryptohypnus pulchellus (Linn.). R. Hislop records its occurrence in Morayshire. Ent. M. Mag. v. p. 139.

New species :—

Elater fulvago, Marseul, L'Abeille, v. p. 176, Beyrout.

Psephus limonioides, Murray, Ann. & Mag. Nat. Hist. 4th ser. ii. p. 96, *P. conicollis*, Murray, *l. c.* p. 97, and *P. nitidus*, Murray, *l. c.* p. 98, from Old Calabar.

Tetralobus subcylindricus, Murray, *l. c.* p. 99, Old Calabar.

Alaus candèzei, Murray, *l. c.* p. 100, Old Calabar.

Adelocera vetusta, Walker, Lord's Naturalist in Vancouver's Island &c. ii. p. 324, Vancouver's Island.

Athous quadrivittatus, Walker, *l. c.* p. 325, Vancouver's Island.

Limonius consimilis, Walker, *l. c.* p. 325, Vancouver's Island.

Diacanthus semimetallicus, Walker, *l. c.* p. 325, Vancouver's Island.

Acroniopus grandis, Redtenbacher, Reise der Novara, Zool. ii. Col. p. 96, New Zealand.

Rhipiceridæ.

Sandalus porosus, sp. n., Leconte, Trans. Amer. Ent. Soc. ii. p. 52, Arkansas and Raton Mountain.

Dascillidæ.

Tournier has published a monograph of the species of this family inhabiting the basin of the Lake of Geneva, with the addition of some from other parts of the south of Europe. In his treatment of the subject he has followed the general plan adopted by Mulsant in his 'Coléoptères de France,' giving first the general character of the family, then descriptions of the known larvæ, the history of the group, and, finally, the systematic description of the genera and species. The larvæ of the following species are described by Tournier :—

Dascillus cervinus (Linn.), p. 10; *Helodes minuta* (Linn.), p. 12, pl. 1. fig. 1; *H. marginata* (Fab.), p. 13, pl. 1. fig. 2; *Cyphon variabilis* (Thunb.), p. 13; *Hydrocyphon deflexicollis* (Müll.), p. 14, pl. 1. fig. 3; and *Eucinetus meridionalis* (Lap.), p. 16. The following known species are figured :—*Dascillus cervinus* (Linn.), pl. 2. figs. 1, 2; *Helodes minuta* (Linn.), pl. 2. fig. 3; *H. marginata*, (Fab.), pl. 2. fig. 4; *H. genei* (Guér.), pl. 2. fig. 9 (last abd. segm.); *H. sericea* (Kies.), pl. 2. fig. 7 (last abd. segm.); *H. hausmanni* (Gredl.), pl. 2. fig. 10 (last abd. segm.); *H. gredleri* (Kies.), pl. 2. fig. 11 (last abd. segm.); *Microcara testacea* (Linn.), pl. 2. fig. 12; *Microcara bohemanni* (Mann.), pl. 2. fig. 13 (details); *Prionocyphon serricornis* (Müll.), pl. 3. fig. 3; *Cyphon coarctatus* (Payk.), pl. 3. figs. 4 & 11 (elytra); *C. palustris* (Thoms.), pl. 3. figs. 5 &

12 (elytra); *C. tabidus* (Kies.), pl. 3. fig. 13 (elytron, ♀); *C. putoni* (Bris.), pl. 3. fig. 15 (elytr. ♀); *C. padi* (Linn.), pl. 3. fig. 16; *C. sulcicollis* (Muls. & Rey), pl. 3. fig. 18; *C. depressus* (Muls. & Rey), pl. 4. fig. 1; *C. variabilis* (Thunb.), pl. 4. figs. 3 & 4 (elytr.); *C. pallidulus* (Boh.), pl. 4. fig. 8 (elytr.); *Hydrocyphon deflexicollis* (Müll.), pl. 4. fig. 9; *Eubria palustris* (Germ.), pl. 4. fig. 10; *Scirtes orbicularis* (Panz.), pl. 4. fig. 11; and *Eucinetus hæmorrhoidalis* (Germ.), pl. 4. fig. 12.

The systematic treatment of the family may be seen from the following abridged Table (*l. c.* pp. 20-22):—

I. Metasternum broad, transverse; posterior coxal laminæ of moderate size; tarsi shorter than tibiæ.

A. Propectus developed in front of anterior coxæ; tarsi with lamellæ. (Tribe I. Dascillites.) ..... 1. *Dascillus*[1] (Lat.).

B. Propectus perpendicular, forming only a slender border beyond the anterior coxæ; tarsi without lamellæ. (Tribe II. Cyphonites.)

1. Femora simple; posterior coxal laminæ more or less obconic within; joint 4 of tarsi bilobed.

a. Last joint of max. palpi as long as preceding; last joint of tarsi small.

* Posterior coxal laminæ much and subconically produced within.

a. Joints 2 and 3 of antennæ small; joints 1 and 2 of posterior tarsi produced within into acute teeth, 1 very long. 2. *Helodes* (Lat.).

β. Joints 2 and 3 of antennæ moderate; joints 1 and 2 of posterior tarsi simple, 1 shorter than the remainder together. 3. *Microcara* (Thoms.).

† Posterior coxal laminæ slightly and shortly obconic within.

a. Antennæ serrated, joint 1 dilated into an auricle within. 4. *Prionocyphon* (Redt.).

β. Antennæ slender, filiform .... 5. *Cyphon* (Payk.).

b. Last joint of max. palpi small, short, conical; last joint of tarsi at least as long as the three preceding united. 6. *Hydrocyphon* (Redt.).

2. Legs ambulatory; posterior coxal laminæ slightly dilated within; joint 4 of tarsi simple..... 7. *Eubria* (Redt.).

3. Femora stout, posterior dilated, saltatory; posterior coxal laminæ dilated within into a small square; joint 4 of tarsi bilobed. 8. *Scirtes* (Ill.).

II. Posterior coxal laminæ very large; at least six ventral segments; tarsi longer than tibiæ. (Tribe III. Eucinetites.) 9. *Eucinetus* (Germ.).

Petalon. Redtenbacher (Reise der Novara, Zool. ii. Col. p. 97) remarks upon the distinctive characters of this genus.

Parelodes, g. n. Redtenbacher, *l. c.* p. 98. Allied to *Cyphon* and *Elodes*, but more elongated, and differing in the structure of the mouth and sternum. Sp. *P. mollis*, sp. n., Redt. *l. c.* p. 99, Ceylon.

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[1] Tournier (*l. c.* pp. 91–93) characterizes Hampe's *Pseudodactylus cribratus*, which, he says, approaches *Dascillus* most closely, and has, contrary to Hampe's statement, five joints in the tarsi.

Coptocera, g. n., Murray, Ann. & Mag. Nat. Hist. 4th ser. ii. p. 93. Sp. *C. gallerucoides*, sp. n., Murray, *l. c.* p. 94, *cum figg.*, Old Calabar.

New species :—

Helodes. Tournier (*l. c.*) describes the following new species of this genus :—*H. scutellaris*, p. 33, pl. 2. fig. 5, Spain; *H. elongata*, p. 34, pl. 3. fig. 1, Valais; *H. kiesenwetteri*, p. 34, pl. 2. fig. 6, Carniola; *H. nigripennis*, p. 35, pl. 2. fig. 8, Constantinople; *H. bonvouloirii*, p. 39, pl. 3. fig. 2, Valais.

Cyphon. Of this genus Tournier (*l. c.*) describes the following new species :—*C. ruficeps*, p. 54, pl. 3. fig. 6, and *C. elongatus*, p. 55, pl. 3. fig. 11, basin of Lake Leman; *C. puncticollis*, p. 56, pl. 3. fig. 7, Salève, Valais; *C. intermedius*, p. 59, pl. 3. fig. 14, Valais, Grisons, Dalmatia; *C. grandis*, p. 62, pl. 3. fig. 8, Geneva; *C. lævipennis*, p. 64, pl. 3. fig. 17, Jura; *C. hydrocyphonoides*, p. 66, South Italy; *C. barnevillei*, p. 71, pl. 4. fig. 2, Voirons; *C. siculus*, p. 74, pl. 4. fig. 5, Sicily; *C. suturalis*, p. 75, pl. 4. fig. 6, Crevin, south of France.

Scirtes ruficollis, Leconte, Trans. Amer. Ent. Soc. ii. p. 53, Raton Mountain and Texas.

Ptilodactyla punctatostriata, Murray, *l. c.* p. 93, Old Calabar.

Ptilodactyla crenato-striata, Redtenbacher, *l. c.* p. 99, Rio de Janeiro.

Malacodermata.

Melyrides. Mulsant & Rey have published (Ann. Soc. Linn. de Lyon, n. s. xv. pp. 237–402) the first portion of their monograph of the species of this group forming their tribe *Floricoles* *. They divide these insects into the following families :—

I. Antennæ not terminated by an abrupt club of three joints; claws lobate or dentate beneath.
  A. Lower surface entirely villous; antennæ subfiliform, or slightly thickened towards apex ..... Dasytiens.
  B. Lower surface nearly smooth, or with a short pubescence; antennæ much thickened and compressed towards apex. Mélyriens.
  C. Lower surface covered with a scaly pubescence; antennæ gradually thickened ..... Danacéens.

II. Antennæ terminated by an abrupt club of three joints. Phlœophiliens.

The *Dasytiens* include two "Branches," namely :—the *Hénicopaires*, having the anterior tibiæ terminated by a strong incurved hook, accompanied by a second smaller one, including only the genus *Henicopus* (Steph.); and the *Dasytaires*, with only two small, straight spurs at the apex of the anterior tibiæ. The latter group is further divided into two "Rameaux,"—the *Dasytates*, with the maxillary palpi subfiliform, and the *Haplocnémates*, with the last joint of the maxillary palpi broader than the preceding and more or less securiform. The *Dasytates* include the genera *Divales* (Lap.), *Dasytes* (Payk.), *Lobonyx* (J.-Duv.), and *Psilothrix* (Redt.), tabulated on p. 291; the specific descriptions reach only to the genus *Dasytes*. To the genus *Divales* (*l. c.*

* Following the example of Jacquelin-Duval, they refer *Phloiophilus* to this group.

p. 292) the authors refer the following species:—*bipustulatus* (Fab.), *quadripustulatus* (Fab.), *tibialis* (Muls. & Revel.), *hæmorrhoidalis* (Fab.), and a new species. The genus *Dasytes* is divided by the authors (*l. c.* p. 312) into five groups or subgenera:—1. *Dasytes*, pr., including *niger* (Linn.), *alpigradus* (Kies.), *griseus* (Küst.), *calabrus* (Costa), *algiricus* (Luc.), and four new species, also (*l. c.* p. 352, note), *dolens* (Rosenh.), *nigrita* (Kies.), *fuscipes* (Br.), *striatulus* (Br.), *græculus* (Kies.); 2. *Hypodasytes*, including *obscurus* (Gyll.); 3. *Mesodasytes*, including *flavipes* (Oliv.)=*plumbea* (Ill.)=*tibialis* (Zett.), *plumbeus* (Oliv.), and two new species; 4. *Metadasytes*, including *pilicornis* (Kies.), *cæruleus* (Fab.), and one new species; and 5. *Pseudodasytes*, including *terminalis* (Rosenh.), *fusculus* (Ill.), *subæneus* (Schönh.)=*scaber* (Suff.).

Lycus. The following known species of this genus are noticed and figured by Murray (Ann. & Mag. N. H. 4th ser. i.) as occurring in Old Calabar:—*L. foliaceus* (Schönh.), p. 323, pl. 9. fig. 1; *L. dentipes* (Schönh.), p. 325, pl. 9. fig. 7 (=*bremei*, Boh. *nec* Guér.); *L. bremei* (Guér.), p. 328, pl. 9. figs. 10–14 (=*dissimilis*, Bertol.); *L. præmorsus* (Schönh.), p. 330 (=*latissimus*, Schönh. =*harpago*, Thoms.); and *L. sinuatus* (Schönh.), p. 333, pl. 9. fig. 21. *Lycus sulcicollis* and *semiflabellatus* (Thoms.) are referred by Murray to *Metriorhynchus* (*op. cit.* ii. pp. 91–92), and described and figured by him.

Murray (Journ. Linn. Soc. Zool. x. pp. 74–82, pl. 1. fig. 1–7) describes and figures a luminous larva from Rio de Janeiro (see *Elateridæ*, p. 246). He also figures the larva of *Photuris versicolor* (*l. c.* pl. 1. fig. 9).

Photuris pennsylvanica ♂ is figured in the American Naturalist, ii. p. 432. fig. 2, with the larva probably of a species of this genus (*l. c.* fig. 1), the ♀ of a *Lampyris* from Zanzibar (*l. c.* fig. 3), the larva of a *Drilus*? (*l. c.* fig. 5), and the luminous larva of some unknown insect (*l. c.* fig. 4).

Bond records the occurrence of two ♂ ♂ of *Drilus flavescens* in copulation simultaneously with the same ♀. The observation was made by H. Rogers in the Isle of Wight (Proc. Ent. Soc. Lond. 1868, p. xxvii).

Phosphœnus hemipterus. Catherine Hopley records the occurrence of this species in a garden at Lewes. Ent. M. Mag. v. pp. 70.

Malthodes. Sharp notices the British species of this genus. Ent. M. Mag. v. pp. 18, 19.

Haplocnemus serratus (Redt.) is a variety of *H. pini* (Redt.). Kraatz, Berl. ent. Zeitschr. 1868, p. 294.

Calosotis, g. n., Redtenbacher, Reise der Novara, Zool. ii. Col. p. 107. Allied to *Henicopus*; tibiæ with a spoon-shaped apical spur. Sp. *C. setulosa*, sp. n., Redt. *l. c.* p. 108, Cape of Good Hope.

New species:—

Lycus. Murray (Ann. & Mag. Nat. Hist. 4th ser. i.) describes the following new species of this genus from Old Calabar:—*L. immersus*, *l. c.* p. 324, pl. 9. figs. 2 & 3 (♀=*xanthomelas*, Schönh.); *L. aspidatus*, *l. c.* p. 325, pl. 9. figs. 4 & 5; *L. semiamplexus*, ibid. pl. 9. fig. 6; *L. subcostatus*, *l. c.* p. 327, pl. 9. fig. 8; *L. scapularis*, ibid. pl. 9. fig. 9; *L. pyriformis*, *l. c.* p. 328, pl. 9. fig. 15; *L. ustus*, *l. c.* p. 329, pl. 9. fig. 17; *L. æolus*, *l. c.* p. 331, pl. 9. fig. 19; *L. elegans*, *l. c.* p. 332, pl. 9. figs. 18 & 20.

Photinus flavicollis, Leconte, Trans. Amer. Ent. Soc. ii. p. 53, Raton Mountain.

Porrostoma laterale, Redtenbacher, Reise der Novara, Zool. ii. Col. p. 100, Sidney.

Metriorhynchus cyanopterus, Redtenbacher, *l. c.* p. 100, pl. 3. fig. 11, Batchian; *M. doleschali*, Redt. *l. c.* p. 101, pl. 3. fig. 12, Amboyna.

Telephorus imperialis, Redtenbacher, *l. c.* p. 103, pl. 4. fig. 1, Sidney; *T. javanus*, Redt. *l. c.* p. 103, Java.

Telephorus longitarsus, Pandellé, Mat. pour la Faune des Col. de Fr. p. 177, Tarbes.

Silis vittigera, Redtenbacher, *l. c.* p. 105, and *S. quadrimaculata*, Redt. ibid., Rio de Janeiro.

Rhagonycha kuleghana, Marseul, L'Abeille, v. p. 177, Syria; *R. sareptana*, Marseul, *l. c.* p. 178, Sarepta.

Rhagonycha heteronota, Pandellé, *l. c.* p. 178, and *R. gracilis*, Pand. *l. c.* p. 179, Pyrenees.

Malthinus syriacus, Marseul, *l. c.* p. 178, *M. sericellus*, Mars. *l. c.* p. 179, and *M. abd-el-kader*, Mars. *l. c.* p. 180, Beyrouth.

Malachius iridicollis, Marseul, *l. c.* p. 182, Beyrouth.

Anthocomus tripartitus, Marseul, *l. c.* p. 183, Lebanon; *A. vesiculiger*, Mars. ibid., Beyrouth.

Apalochrus cinctus, Redtenbacher, *l. c.* p. 106, Sidney.

Charopus biguttatus, Redtenbacher, *l. c.* p. 106, Cape of Good Hope.

Divales brevicornis (Bris. MS.), Mulsant & Rey, *l. c.* p. 308, Trieste.

Ebœus flavobullatus, Marseul, *l. c.* p. 184, and *E. pugio*, Mars. *l. c.* p. 185, Beyrouth.

Antidipnis heteropalpus, Marseul, *l. c.* p. 186, and *A. palpator*, Mars. *l. c.* p. 188, Beyrouth.

Troglops rhinoceros, Marseul, *l. c.* p. 189, Beyrouth.

Colotes flavocinctus, Marseul, *l. c.* p. 189, Beyrouth.

Danacœa genistæ, Marseul, *l. c.* p. 190, Lebanon.

Dasytes. Mulsant & Rey describe the following new species of this genus:—(subg. *Dasytes*) *D. thoracicus*, *l. c.* p. 319, Nice; *D. montanus* (Ulrich, MS.), *l. c.* p. 322, Auvergne and Pyrenees; *D. gonocerus*, *l. c.* p. 331, Pyrenees; *D. tristiculus*, *l. c.* p. 336, Languedoc and Provence: (subg. *Mesodasytes*) *D.* (*M.*) *coxalis*, *l. c.* p. 362 (=*flavipes*, Fab., Redt.=*tibialis*, var. *b*, Zett.), France &c.; *D. tibiellus*, *l. c.* p. 362, note, Médéah: (subg. *Metadasytes*) *D.* (*M.*) *nigrocyaneus*, *l. c.* p. 379, Paris.

Dasytes circumcinctus, Redtenbacher, *l. c.* p. 107, Cape of Good Hope.

Prionocerus bicolor, Redtenbacher, *l. c.* p. 109, pl. 4. fig. 3, Java; *P. hilgeli*, Redt. *l. c.* p. 110, China.

Idgia oculata, Redtenbacher, *l. c.* p. 110, pl. 4. fig. 2, China; *I. chloroptera*, Redt. *l. c.* p. 111, Ceylon; *I. flavicollis*, Redt. ibid., Hongkong.

Cleridæ.

New species :—

Clerus sobrius, Walker, Lord's Naturalist in Vancouver's Island &c. ii. p. 326, Vancouver's Island.

Opilus grandis, Stierlin, Mitth. schw. ent. Gesellsch. ii. p. 346, Bagdad.

Cymatodera californica, Horn, Trans. Amer. Ent. Soc. ii. p. 134, California.

Enoplium humerale, Horn, *l. c.* p. 135, New Mexico.

Hydnocera robusta, Horn, *l. c.* p. 135, California.

Acrepis 4-signata, Horn, *l. c.* p. 135, California.

Corynetes pexicollis, Fairmaire, Ann. Soc. Ent. Fr. 4e sér. viii. p. 484, Algeria.

Ptinidæ.

Kiesenwetter states (Berl. ent. Zeitschr. 1868, p. 104) that Thomson's generic names of *Anobiides* have the priority over Mulsant's. He gives the following synonyms of some of Thomson's species:—*Ernobius abietis* is not *abietis* (auct.), probably=*pini*; *E. abieticola*=*abietis*; *Hadrobregmus brunneus*=*An. rufipes* ♂; *H. sericeus*=*An. fulvicorne*; *An. fulvicorne*=*fagicola* and *Dorcatoma sinuata*=*D. dresdensis*.

Ptinus xylopertha (Reiche) occurs in Greece. Bethe, Stett. ent. Zeit. 1868, p. 167.

Lucas notices the mischief done by *Anobium panicum*. Bull. Soc. Ent. Fr. 1868, p. cix.

Ptinus fur is figured in Amer. Natural. ii. p. 165. fig. 6.

The larva of *Ptinus fur* is figured in Amer. Natural. ii. p. 443. fig. 2.

Anobium reyi, C. Bris. de Barneville, Mat. pour la Faune des Col. de Fr. p. 180, South of France.

Bostrichidæ.

Bostrichus bicaudatus (Say). On the habits of this species see Walsh, Pract. Entom. i. p. 27.

Exopioides incisa, sp. n., Leconte, Trans. Amer. Ent. Soc. ii. p. 64, California.

Enneadesmus nicobaricus, sp. n., Redtenbacher, Reise der Novara, Zool. ii. Col. p. 114, Sambelong.

Cissidæ.

Pascoe (Trans. Ent. Soc. Lond. 3rd ser. iii. p. 486, note) proposes to change the name *Pterogenia* into *Apogenia*, the former being preoccupied.

Melasomata.

Zophosides.

Zophosis nyctocharis, Redtenbacher, Reise der Novara, Zool. ii. Col. p. 116, Cape of Good Hope.

Erodiides.

Arthrodeis occidentalis, Fairmaire, Ann. Soc. Ent. Fr. 4e sér. viii. p. 484, Morocco.

Tentyriides.

Ascelosodis, g. n., Redtenbacher, Reise der Novara, Zool. ii. Col. p. 117. Allied to *Tribolocara*. Sp. *A. serripes*, sp. n., Redt. *l. c.* p. 118, East Indies.

Aspidolobus, g. n., Redtenbacher, *l. c.* p. 118. Allied to *Peltolobus*. Sp. *A. piliger*, sp. n., Redt. *l. c.* p. 119, Chili.

Aryenis, g. n., F. Bates, Trans. Ent. Soc. Lond. 1868, p. 309. Allied to *Evaniosomus*; mentum hexagonal; eyes transverse, approximate beneath; prosternal process terminating in a small, compressed pointed tubercle. Sp. *A. rufescens*, F. Bates, *l. c.* p. 310, pl. 15. fig. 1, Pampas of La Plata.

Adelostomides.

Zopherus jordani (Sallé). Lucas, in exhibiting two living examples of this species, mentions that it is called *Cameleon* by the natives of Guatemala. Bull. Soc. Ent. Fr. 1868, p. xlvii.

Steira crenato-costata, sp. n., Redtenbacher, Reise der Novara, Zool. ii. p. 120, Cape of Good Hope.

Blaptides.

J. E. Braselman describes and figures a monstrosity of *Blaps obtusa* (St.), consisting in the presence on the right hind leg of a crooked supplementary tibia, having two 4-jointed tarsi, and springing from near the base of the true tibia (Verhandl. naturh. Ver. preuss. Rheinl. und Westph. 1867, pp. 301–302, pl. 1. fig. 1).

Eleodes. Walker describes the following new species of this genus from Vancouver's Island:—*E. subtuberculata*, *l. c.* p. 328; *E. convexicollis*, ibid.; *E. binotata*, *l. c.* p. 329; *E. conjuncta*, ibid.; *E. latiuscula*, ibid.

Asidides.

Asida scabrata, Fairmaire, Ann. Soc. Ent. Fr. 4e sér. viii. p. 485, Bone; *A. sulcipennis*, Fairm. ibid., Algeria; *A. henonii*, Fairm. *l. c.* p. 486, Constantine; *A. crassicollis*, Fairm. *l. c.* p. 487, Algeria; *A. dermatodes*, Fairm. *l. c.* p. 488, Tlemcen; *A. politicollis*, Fairm. *l. c.* p. 489, El Aghoual.

Pedinides.

Asphalus, g. n., Pascoe, Proc. Ent. Soc. Lond. 1868, p. xii. Trophi as in *Pedinus*, but the inner lobe of the maxillæ strongly hooked; joint 3 of antennæ scarcely longer than 4; prothorax bisinuate at base; anterior tibiæ and tarsi simple. Sp. *A. ebeninus*, sp. n., Pasc. ibid., Australia.

Opatrides.

Brachyesthes, g. n., Fairmaire, Ann. Soc. Ent. Fr. 4e sér. viii. p. 490. Allied to *Melanesthes*; prothorax fitting exactly to the base of the elytra, its posterior margin not bordered; epipleuræ broad, well-defined; tibiæ setose; joint 1 of posterior tarsi scarcely longer than 2. Sp. *Mel. pilosellus* (Mars.).

Eurycaulus, g. n., Fairmaire, *l. c.* p. 492. Allied to *Microzoum*; epipleural fold interrupted behind; tibiæ unarmed, the anterior with a tarsal groove; prosternum not produced behind. Sp. *E. marmottani*, sp. n., Fairm. *l. c.* p. 492, Biskra.

Trachyscelides.

Bycrea, g. n., Pascoe, Proc. Ent. Soc. Lond. 1868, p. xii. Intermediate to *Trachyscelinæ* and *Phaleriinæ*; labrum concealed; cheeks impinging upon the middle of the eyes; prothorax bisinuate at base; mesosternum incised in front; tarsi unicalcarate; margins of body ciliated. Sp. *B. villosa*, sp. n., Pasc. ibid., Mexico.

Phaleria proxima, sp. n., Fairmaire, Ann. Soc. Ent. Fr. 4e sér. viii. p. 797, Aden.

Bolitophagides.

Orcopagia, g. n., Pascoe, Proc. Ent. Soc. Lond. 1868, p. xii. Allied to

Bolitotherus; antennæ 10-jointed, club 2-jointed; epipleura indistinct; anterior tibiæ crescentiform; basal joint of tarsi free. Sp. *O. monstrosa*, sp.n., Pasc. ibid., Australia.

Bolitophagus aspericollis, sp. n., Fairmaire, *l. c.* p. 798, Comores.

Diaperides.

Diphyrhynchus nicobaricus, sp. n., Redtenbacher, Reise der Novara, Zool. ii. p. 124, Kar-Nicobar.

Ceropria coquerelii, sp. n., Fairmaire, *l. c.* p. 797, Madagascar.

Anemia pilosa, sp. n., Tournier, L'Abeille, v. p. 146, Algeria.

Ulomides.

Uloma intrusicollis, sp. n., Fairm. *l. c.* p. 798, Comores; *U. crenatostriata*, sp. n., Fairm. *l. c.* p. 799, Seychelles.

Uloma nitens, sp. n., Redtenbacher, *l. c.* p. 125, New Zealand.

Toxicum flavofemoratum, sp. n., Redtenbacher, *l. c.* p. 126, Manilla.

Cossyphides.

Horn notices the structure of the genus *Cossyphus*, and especially the union of the edges of the prosternal epimera behind the prosternum, which consequently never approaches the mesosternum. He remarks that this character approximates *Cossyphus* to the Rhynchophora. Proc. Amer. Ent. Soc. 1868, p. x.

Cœlometopides.

Hypaulax, g. n., F. Bates, Trans. Ent. Soc. Lond. 1868, p. 259. Allied to *Polypleurus*; inner lobe of maxillæ with a strong claw, unequally bifid: last joint of labial palpi subtriangular; labrum sinuous in front; joint 3 of antennæ a little longer than 4. Sp. *H. marginata*, F. Bates, *l. c.* p. 261, pl. 12. fig. 1* (details), Queensland; *H. sinuaticollis*, F. Bates, ibid., Queensland; *H. tarda*, F. Bates, *l. c.* p. 262, Queensland; *H. oblonga*, F. Bates, *l. c.* p. 263, New South Wales; *H. ovalis*, F. Bates, ibid., pl. 12. fig. 1, Queensland.

Chileone, g. n., F. Bates, *l. c.* p. 264. Allied to preceding genus; joints 3–6 of antennæ subequal; head more exserted and narrowed behind; thorax bisinuate in front. Sp. *C. deyrollii*, F. Bates, *l. c.* p. 264, pl. 12. fig. 2, Queensland.

Tenebrionides.

Dechius (Pasc.). F. Bates (Trans. Ent. Soc. Lond. 1868, p. 265) remarks upon the characters of this genus, in which he says there is a small claw or hook on the inner lobe of the maxillæ. The chief distinctive character of the genus, according to Bates, is that the epipleural fold of the elytra is incomplete behind.

Iphthimus. An abstract of Truqui's paper on this genus is published by De Marseul, L'Abeille, v. pp. 271–275. He adds the description of a new species.

Orobychus, g. n., Pascoe, Proc. Ent. Soc. Lond. 1868, p. xii. Allied to *Iphthimus*; mentum bilobed in front, not furrowed in the middle; tibiæ curved, anterior in ♂ longitudinally excavated, toothed towards apex within; tarsi shortly and sparsely ciliated beneath. Sp. *O. lacordairii* (Dej.), Pasc. ibid., Brazil.

Ædiatrix, g. n., F. Bates, Trans. Ent. Soc. Lond. 1868, p. 315. Allied to *Goniadera*; mentum cordiform; joint 2 of max. palpi broadly and very obliquely truncate, 3 angularly produced at apex; antennæ shorter than prothorax; epipleural fold subhorizontal; prosternal process terminating behind in a small triangular point. Sp. *Æ. jansoni*, sp. n., F. Bates, *l. c.* p. 316, pl. 15. fig. 4, Java.

New species:—

Iphthinus (sic) *servilis*, Walker, Lord's Naturalist in Vancouver's Island &c. ii. p. 326, *I. servator*, Walker, *l. c.* p. 327, and *I. subligatus*, Walker, ibid., Vancouver's Island.

Iphthimus truquii (Peyr.), Marseul, L'Abeille, v. p. 274, Syria.

Nycteropus. Of this genus Fairmaire (Ann. Soc. Ent. Fr. 4e sér. viii.) describes the following new species:—*N. subcyaneus*, *l. c.* p. 800, Nossi-Bé; *N. virescens*, *l. c.* p. 801, *N. cœlestinus*, *l. c.* p. 802, *N. seriatoporus*, *l. c.* p. 803, *N. coquerelii*, *l. c.* p. 804, and *N. suturatus*, ibid., Madagascar.

Arthrodactyla intermedia, Fairmaire, *l. c.* p. 806, Madagascar.

Nyctobates globulicollis, Fairmaire, *l. c.* p. 807, Comores.

Dechius scissicollis, F. Bates, *l. c.* p. 266, pl. 12. fig. 8, New South Wales.

Goniadera interrupta, F. Bates, *l. c.* p. 312, pl. 15. fig. 3, Peru.

Tetraphyllus coquerelii and *T. consobrinus*, Fairmaire, *l. c.* p. 808, Madagascar.

Cyphaleides.

Artactes, g. n., Pascoe, Proc. Ent. Soc. Lond. 1868, p. xii. Allied to *Hemicyclus*; last joint of tarsi elongate; prosternum posteriorly subdepressed, excavated; body hemispherical. Sp. *A. nigritarsis*, sp. n., Pasc. ibid., Sumatra.

Cnodalonides.

Titæna interrupta, sp. n., Redtenbacher, Reise der Novara, Zool. ii. Col. p. 128, New Zealand.

Helopides.

Dædrosis, g. n., F. Bates, Trans. Ent. Soc. Lond. 1868, p. 266. Allied to *Thoracophorus*; epistome gradually narrowed in front, where it is arcuately emarginate; last joint of labial palpi subcylindrical; joint 3 of antennæ a little longer than 4. Sp. *D. crenato-striata*, F. Bates, *l. c.* p. 268, New South Wales; *D. ambigua*, F. Bates, *l. c.* p. 269, pl. 12. fig. 3, New South Wales.

Amarosoma, g. n., Redtenbacher, Reise der Novara, Zool. ii. Col. p. 131. Allied to *Pseudhelops*. Sp. *A. simulans*, sp. n., Redt. *l. c.* p. 132, New Zealand; perhaps also *Tanychilus metallicus* (Boisd.).

Blepegenes, g. n., Pascoe, Proc. Ent. Soc. Lond. 1868, p. xii. Allied to *Atryphodes*; head exserted; clypeus not thickened, clypeal furrow interrupted in the middle; ocular auricles recurved and produced into spines; prothorax truncate in front. Sp. *B. aruspex*, sp. n., Pasc. ibid., Australia.

Helops inclusus, sp. n., Walker, Lord's Naturalist &c. ii. p. 330, Vancouver's Island.

Nephodes subdepressus, sp. n., Fairmaire, Ann. Soc. Ent. Fr. 4e sér. viii. p. 493, Lambessa.

Thoracophorus licinoides, sp. n., Redtenbacher, *l. c.* p. 129, pl. 4. fig. 5, and *T. brevicollis*, Redt. *l. c.* p. 130, pl. 4. fig. 6, Sidney.

Cononotus macer, sp. n., Horn, Trans. Amer. Ent. Soc. ii. p. 136, California (North-American species tabulated).

Amarygmides.

Amarygmus cuproœneus (sic), Fairmaire, Ann. Soc. Ent. Fr. 4e sér. viii. p. 799, and *A. funerarius*, Fairm. *l. c.* p. 800, Madagascar.

Strongyliides.

Psydus, g. n., Pascoe, Proc. Ent. Soc. Lond. 1868, p. xii. Allied to *Dicyrtus*; antennæ short, joints 7–11 transverse, compressed; mesosternum excavated; last joint of tarsi elongated. Sp. *P. plantaris*, sp. n., Pasc. ibid., Ceylon.

Diestica, g. n., Pascoe, *l. c.* p. xii. Last 4 (or 5) joints of antennæ transverse, dilated; eyes distant; prothorax carinated at the sides. Sp. *D. viridipennis*, sp. n., Pasc. ibid., Ega.

Strongylium rudicolle, sp. n., Fairmaire, *l. c.* p. 810, Madagascar.

Praogena purpurina, sp. n., Fairmaire, *l. c.* p. 810, Madagascar.

Nisogena goudotii, Fairmaire, *l. c.* p. 810, and *N. testaceipes*, Fairm. *l. c.* p. 811, Madagascar.

Cistelidæ.

Nemostira, g. n., Fairmaire, Ann. Soc. Ent. Fr. 4e sér. viii. p. 815. Allied to *Statira*; head produced into a muzzle; eyes very large, approximate both above and below; last joint of palpi cultriform; antennæ long, last joint as long as the three preceding; joint 1 of posterior tarsi as long as the others together. Sp. *Stat. servillei* (Cast.); *N. coquerelii*, sp. n., Fairmaire, *l. c.* p. 816, Madagascar. Probably also *S. flava* (Cast.) and *S. ovalis* (Cast.).

Cistelomorpha, g. n., Redtenbacher, Reise der Novara, Zool. ii. Col. p. 134. Allied to *Cistela*, but mandibles simple at apex, antennæ filiform, abdomen in a line with metasternum. Sp. *C. hæmatica*, sp. n., Redt. *l. c.* p. 135, pl. 4. fig. 9, Ceylon; *C. straminea*, sp. n., Redt. ibid., pl. 4. fig. 10, China.

Alcmeonis, g. n., F. Bates, Trans. Ent. Soc. Lond. 1868, p. 270. Allied to *Atractus*; intercoxal process subtriangular and subacuminate at apex; thorax broader behind, with its base subsinuous; legs shorter and more slender; claws less robust and more finely pectinate. Sp. *A. pulchra*, F. Bates, *l. c.* p. 271, pl. 12. fig. 4, Adelaide.

Licymnius, g. n., F. Bates, *l. c.* p. 271. Allied to preceding, but joint 11 of antennæ scarcely half as long as 10, subovoid. Sp. *L. foveicollis*, F. Bates, *l. c.* p. 272, pl. 12. fig. 5, Brisbane.

Anaxo, g. n., F. Bates, *l. c.* p. 272. Allied to preceding; maxillary palpi more robust, joint 2 shorter; joint 9 of antennæ subtruncate, slightly produced at apex within; intercoxal process gradually arched to apex, which is acuminate. Sp. *A. brevicornis*, sp. n., F. Bates, *l. c.* p. 273, pl. 12. fig. 6, Adelaide.

New species.

Cistela pubens, Fairmaire, *l. c.* p. 815, Madagascar.

Cistela costessii, Bertolini, Verh. zool.-bot. Ges. in Wien, xviii. p. 119, near Trient.

Omophlus longicornis, Bertolini, *l. c.* p. 119, near Trient.

Prostenus californicus, Horn, Trans. Amer. Ent. Soc. ii. p. 138, California.

Chromomæa pascoei, F. Bates, Trans. Ent. Soc. Lond. 1868, p. 317, Brisbane; *C. vittata*, F. Bates, *l. c.* p. 318, Brisbane and New South Wales; *C. pallida*, F. Bates, *l. c.* p. 319, New South Wales; *C. rufescens*, F. Bates, *l. c.* p. 320, New South Wales; *C. unicolor*, F. Bates, ibid., South Australia.

Othelecta vestita, F. Bates, *l. c.* p. 269, South Africa.

Pythidæ.

Rhinosimus. Schmidt-Göbel (Stett. ent. Zeit. 1868, pp. 380–382) remarks upon the synonymy of *R. ruficollis*. This species, according to him, = *Curc. ruficollis* (Linn.), *Attel. rufic.* (Hbst.), *Anthr. rufic.* (Clairv.), *A. roboris* (Payk.), *R. roboris* (Latr.), *Anthr. roboris* (Panz.), *Salp. ruficollis* (Gyll., Steph.), and *R. roboris* and *ruficollis* (Redt.). On the other hand, *Anthr. ruficollis* (Panz.) = *roboris* (Fab.), *Salp. viridipennis* (Steph.), *R. genei* (Costa), *R. ruficeps* (Bosc), is a distinct species, and belongs to the genus *Salpingus*.

Melandryidæ.

Nothus. Kraatz (Berl. ent. Zeitschr. 1868, pp. 334, 335) discusses the characters of the European species of this genus, *N. bipunctatus* (Fab.) and *æneipennis* (Kriechb.), of the distinctness of which he is rather doubtful, and indicates the characters of an Andalusian form, for which he proposes the provisional name of *N. vandalitiæ*.

Dircæa revelierii (Muls.). Kraatz (Berl. ent. Zeitschr. 1868, p. 333) suggests that this species may be identical with *D. parreysii* (Aubé).

Ctenoplectron, g. n., Redtenbacher, Reise der Novara, Zool. ii. Col. p. 136. Allied to *Orchesia* and *Hallomenus*. Sp. *C. fasciatum*, sp. n., Redt. *l. c.* p. 137, pl. 4. fig. 8, New Zealand.

Chalcodrya, g. n., Redtenbacher, *l. c.* p. 138. Allied to *Melandrya*; antennæ thin, eyes spherical, tarsi long and simple. Sp. *C. variegata*, sp. n., Redt. *l. c.* p. 138, pl. 4. fig. 7, New Zealand.

Lagriidæ.

Xenostethus, g. n., F. Bates, Trans. Ent. Soc. Lond. 1868, p. 321. Allied to *Statira*; labium transverse, paraglossæ (?) greatly developed, uniting at their inner margins, forming a large triangular piece concealing the ligula. Sp. *X. lacordairii*, sp. n., F. Bates, *l. c.* p. 324, pl. 15. fig. 5, West Africa.

Lagria grenieri, sp. n., C. Bris. de Barneville, Mat. pour la Faune des Col. de Fr. p. 181, South of France.

Pedilidæ.

Xylophilus amabilis (Sahlb.) = *bisbimaculatus* (Hampe) lives on the lime tree, as observed by Hensel. Bethe, Stett. ent. Zeit. 1868, p. 165.

Anthicidæ.

Anthicus lessepsi, sp. n., Marseul, L'Abeille, v. p. 192, Egypt.

Mecynotarsus delicatulus, sp. n., Horn, Trans. Amer. Ent. Soc. ii. p. 137, Fort Yuma.

Mordellidæ.

Ochthenomus signatus (Ullr.) = *angustatus* (Redt.). Kraatz, Berl. ent. Zeitschr. 1868, p. 295.

Mordella annulata, sp. n., Redtenbacher, Reise der Novara, Zool. ii. Col. p. 140, Nicobar (Sambelong); *M. lepida*, sp. n., Redt. *l. c.* p. 141, Sidney.

Rhipiphoridæ.

F. Bates states that *Acosmus capensis* (Dej.) is identical with *Geoscopus murinus* (Gerst.). Trans. Ent. Soc. Lond. 1868, p. 325.

Toposcopus, g. n., Leconte, Trans. Amer. Ent. Soc. ii. p. 54. Allied to *Evaniocera*; eyes divided; joint 3 of antennæ longer, with a process four-fifths as long as those of following joints; claws bifid at tip, and with 3 slight teeth. Sp. *T. wrightii*, sp. n., Leconte, *l. c.* p. 54, New Mexico.

Meloidæ.

Horn, in characterizing a new genus of this group (Trans. Amer. Ent. Soc. ii. p. 139), tabulates as follows the Meloïform genera represented in the United States:—

I. Elytra imbricated; claws cleft	*Meloë* (Linn.).
II. Elytra divergent from scutellum; claws toothed	*Megetra* (Lec.).
III. Elytral margins contiguous at anterior third.	
A. Claws equally cleft	*Nomaspis* (Lec.).
B. Claws with lower portion much shorter	*Poreospasta*, g. n.
IV. Elytra contiguous along entire margin.	
A. Claws cleft; elytra subconnate	*Henous* (Hald.).
B. Claws toothed; elytra connate and inflated..	*Cysteodemus* (Lec.).

Stierlin maintains the distinctness of *Epicauta flabellicornis* (Germ.) and *E. sibirica* (Gebl.). Mitth. Schw. entom. Gesellsch. ii. p. 312.

Lytta vittata, *cinerea*, *atrata*, and *marginata*. On the habits of these species see Walsh, Pract. Entom. ii. p. 26.

Laboulbène and Girard notice *Epicauta adspersa* (Klug) and its vesicatory action. Bull. Soc. Ent. Fr. 1868, pp. xlvii–xlviii.

Poreospasta, g. n., Horn, *l. c.* p. 139 (*vide suprà*). Sp. *P. polita*, sp. n., Horn, ibid., California.

New species:—

Megetra opaca, Horn, *l. c.* p. 139, California.

Nomaspis sublævis, Horn, *l. c.* p. 140, California.

Lytta immerita, Walker, Lord's Naturalist in Vancouver's Island &c. ii. p. 330, Vancouver's Island.

Nemognatha bicolor, Walker, *l. c.* p. 331, Vancouver's Island.—*Nemognatha sparsa*, Leconte, Trans. Amer. Ent. Soc. ii. p. 53, Raton Mountain.

Epicauta stuarti, Leconte, *l. c.* p. 54, New Mexico.

Zonitis æneiventris, Redtenbacher, Reise der Novara, Zool. ii. Col. p. 144, Sidney.

Œdemeridæ.

Rhinoplatia, g. n., Horn, Trans. Amer. Ent. Soc. ii. p. 137. Allied to *Chitona*; mandibles entire, acute; mentum subquadrate; eyes oblique, distant from prothorax. Sp. *R. ruficollis*, sp. n., Horn, *l. c.* p. 138, California.

Mycterus flavipennis, sp. n., Horn, Trans. Amer. Ent. Soc. ii. p. 136, Oregon; North-American species tabulated.

Nacerdes nigrifrons, sp. n., Fairmaire, Ann. Soc. Ent. Fr. 4e sér. viii. p. 817, and *N. foveicollis*, sp. n., Fairm. ibid., Madagascar.

Salpingus coquerelii, sp. n., Fairmaire, *l. c.* p. 818, and *S. sculptilis*, sp. n., Fairm. *l. c.* p. 819, Simon's Bay.

Asclera cinerascens, sp. n., Pandellé, Mat. pour la Faune des Col. de Fr. p. 182, Hautes-Pyrénées.

Curculionidæ.

Otiorhynchides. Seidlitz has subjected the true Otiorhynchides to a monographic revision (Berl. ent. Zeitschr. 1868, Beiheft). He remarks that the character derived from the free or united condition of the claws is not sufficient for the establishment of groups, and therefore combines Lacordaire's groups *Peritelides*, *Trachyphlœides*, and *Laparocerides*, separated on account of their united claws, with the *Otiorhynchides* s. str., as follows (*l. c.* p. 1) :—

I. Corbulæ of post. tibiæ cavernous, wings usually 0 { *Celeuthetides*, Lac. / *Oosomides*, Lac. / *Episomides*, Lac. / *Eustylides*, Lac.

II. Corbulæ of post. tibiæ open.

A. Metasternum very short, intercoxal part parallel, more or less broad; wings 0 ..... *Otiorhynchides*, s. str.

B. Metasternum elongate, intercoxal part narrow, generally oval; winged. *Phyllobiides*, Lac.

The group of true Otiorhynchides, as thus laid down by Seidlitz, is divided by him into two great sections, in one of which the scrobes are entirely superior, or furnished above with laterally projecting lobes (*pterygia*), whilst in the second the scrobes are entirely lateral. The 36 genera accepted by Seidlitz are tabulated by him in accordance with this mode of arrangement as follows (*l. c.* pp. 2–4) :—

I. Scrobes entirely superior or divaricated by pterygia (Section I.).

A. Margin of thorax behind eyes ciliated. 1. Hyphantus (Germ.).

B. Margin of thorax not ciliated

1. Funiculus 6-jointed..... 2. Agraphus (Sch.).

2. Funiculus 7-jointed.

a. An elevated keel on each side above the eye. 3. Calyptops (Sch.).

b. No supraocular keel.

* Rostrum round and narrow.

α. Suture between segments 1 and 2 of abdomen straight. 4. Phlyctinus (Sch.).

β. Suture between segments 1 and 2 angulated. 5. Merimnetes (Sch.).

† Rostrum angular, thicker.

α. Anterior coxæ distant .... 6. Asceparnus (Sch.).

β. Anterior coxæ not distant.

a. Rostrum separated from forehead by a transverse furrow; body scaled above; abdominal segment 2 usually straight in front.

** Claws free; abdominal segment 1 straight in front.
7. Sciobius (Sch.).

†† Claws connate.
aa. Antennæ long . . 8. Isaniris (Thoms.).
bb. Antennæ short.
— Pterygia strongly divaricate.
9. Caterectus (Sch.).
= Pterygia but slightly divaricate.
10. Holcorhinus (Sch.)

b. Rostrum not separated from forehead (or body pilose).
** Body pilose; claws connate, equal.
aa. Abdominal segment 2 straight in front.
11. Cyclomaurus (Fairm.)
bb. Abdominal segment 2 angulate.
12. Mylacus (Sch.).

†† Body scaled (or if pilose or naked, claws free or unequal)
aa. Rostrum narrow; femora dentate; claws connate.
13. Nastus (Sch.).
bb. Rostrum broader; femora unarmed (or dentate, and claws free).
— Intercoxal process broad, truncate.
aa. Femora strongly clavate, usually dentate; claws free.
aa. Pterygia strongly divaricated.
14. Otiorhynchus (Germ.).
bb. Pterygia not divaricated.
o. Body pilose.
15. Stomodes (Sch.).
oo. Body scaly.
16. Parameira.
ββ. Femora slightly clavate, unarmed.
aa. Head not striated on the sides.
o. Abdominal segment 2 angulate in front.
17. Peritelus (Germ.).
oo. Abdominal segment 2 straight.
18. Paraptochus.
bb. Head striated at the sides and beneath.
19. Cœnopsis (Bach.).
= Intercoxal process narrow, acuminate.
20. Ptochus (Sch.).

II. Scrobes lateral (Section II.).
A. Scrobes vanishing behind, not reaching eyes, or bent below the eyes.
1. Abdominal segment 2 straight in front, or slightly arcuate.
a. Scales rotundate.
* Antennæ half as long as body.
21. Epiphaneus (Sch.).
† Antennæ a little longer than thorax.
22. Pholicodes (Sch.).
b. Scales piliform or 0.

* Scales piliform ..... 23. Aprepes (Sch.).
† Scales 0, body pilose.
α. Antennæ submedian; rostrum separated from forehead by a furrow; femora unarmed.
24. Aomus (Sch.).
β. Antennæ subterminal; no furrow between forehead and rostrum ..... 25. Elytrodon (Sch.).
2. Abdominal segment 2 angulate in front.
a. Claws free; rounded scales 0.
* Facies of *Phytonomus*; scales bifid.
26. Bubalocephalus (Cap.).
† Facies of *Laparocerus*; body thinly pilose.
27. Anemophilus (Woll.).
b. Claws connate.
* Rostrum and head shorter than prothorax and much narrower; scrobes triangular, evanescent at eyes.
α. Body scaly..... 28. Lichenophagus (Woll.).
β. Body not scaly ..... 29. Laparocerus (Sch.).
† Rostrum and head longer and a little narrower than prothorax; scrobes partially deflexed or sublateral.
α. Scrobes not deflexed; body scaleless.
30. Omias (Sch.).
β. Scrobes deflexed (or simple, but body scaly).
a. Body above pilose or naked; lower part of scrobes deflexed ..... 31. Barypeithes (J.-Duv.).
b. Body above scaly or setose; scrobes generally entirely deflexed ..... 32. Platytarsus (Sch.).
B. Scrobes deep, distinctly bounded, more or less attaining the eyes, not deflexed.
1. Thorax subtransverse, small.
a. Abdomen opaquely scaly.
* Elytra costate ..... 33. Glyptosomus (Sch.).
† Elytra plane ..... 34. Trachyphlœus (Germ.).
b. Abdomen shining-subgranulato-squamose.
35. Cathormiocerus (Sch.).
2. Thorax oblong-ovate, very large.
36. Axyræus (Kies.).

Of these genera those including only exotic species are merely indicated with their species by the author (pp. 5, 6 and 47, 48); most of the European genera are monographically treated, the species being tabulated and afterwards described in detail; for *Otiorhynchus* Seidlitz refers to Stierlin's monograph, and for *Peritelus* to his own monograph, except the species of Jacquelin-Duval's genus *Meira*, which Seidlitz combines with *Peritelus*.

Hyperides. Capiomont has concluded his revision of this group (Ann. Soc. Ent. Fr. 4e sér. viii. pp. 73–286; see Zool. Rec. iv. p. 275). He describes the remaining species of the genus *Hypera* (*l.c.* pp. 73–113), those of *Phytonomus* (*l.c.* pp. 114–244) (which he divides into 7 groups or subgenera, named *Donus*, *Metadonus*, *Erirhinomorphus*, *Dapalinus*, *Tigrinellus*, *Phytonomus*, and *Phytonomidius*), *Limobius* (*l.c.* pp. 244–251), and *Coniatus* (*l.c.* pp. 251–272), the last-mentioned genus being divided into 2 sections, "*Coniatus vrais*" and "*Bagoïdes.*"

The author gives a list of species of this group which he has not seen (*l. c.* pp. 273–281), and adds *Phyt. rogenhoferi* (Ferr.) to his list, placing it in *Phytonomus* pr. *P. ovatipennis, lineatocollis,* and *minutus* (Blanch.), from Chili, do not belong to the Hyperides, and *P. lilliputanus* (Luc.) is referred to the Erirhinides. In conclusion Capiomont reprints Walton's synonymy of the British species of this group. The figures accompanying this paper represent the cocoons of *Coniatus suavis, Hypera tessellata,* and *Phytonomus scolymi, rumicis,* and *nigrirostris,* pl. 1. figs. 1–5; *Phyt. nigro-velutinus* (Fairm.), pl. 1. fig. 7, and its rostrum, fig. 6; *Hyp. kraatzi* (Cap.), pl. 1. fig 8; *H. austera* (Boh.), pl. 1. fig. 10; *Phyt. isabellinus* (Schönh.), pl. 2. fig. 1; *Hyp. palumbaria* (Germ.), *intermedia* (Boh.), *arvernica* (Cap.), and *cypris* (Reiche), pl. 2. figs. 3–6; *Phyt. dapalis* (Boh.), pl. 3. fig. 1; *Bubalocephalus kiesenwetteri* (Cap.), pl. 3. figs. 3–5, with details; *H. hispidula* (Schönh.), pl. 4. fig. 1; *Phyt. striatus* (Sturm), pl. 4. fig. 2; and *P. maculipennis* (Fairm.), pl. 4. fig. 4.

Balanides et *Anthonomides.* Desbrochers des Loges has published (Ann. Soc. Ent. Fr. 4e sér. viii. pp. 331–368 and 411–470) a monograph of the European species of these groups, omitting *Acalyptus* and *Orchestes,* the latter already treated by Brisout de Barneville, and the former referred by the author to the *Tychiides.* The genera admitted by him are *Balaninus, Anthonomus, Bradybatus,* and a new genus, which he names *Pseudomorphus. Balaninus* includes 17 species, of which 3 are described as new. *B. glandium* (Marsh.) is regarded as a distinct species=*venosus* (Germ.); *B. tesselatus* (Fourc.)= *turbatus* (Gyll.), *B. villosus* (Fab.)=*cordifer* (Fourc.)=*cerasorum* (Oliv.)= *tenuirostris* (Steph.), *B. rubidus* (Gyll.)=*betulæ* (Steph.), *B. crux* (Fab.)= *salicis* (Panz.), *B. brassicæ* (Fab.) = *salicivorus* (Gyll.), *B. pyrrhoceras* (Marsh.) incl. *brunneus* (Marsh.); *B. pedemontanus, rhæticus,* and *crucifer* (Fuchs) are not referred to by the author. Of the genus *Anthonomus* the author describes 25 species, the first of which, *A. rectirostris* (Linn.), is separated as a subgenus under the name of *Furcipus,* characterized by having the femora bidentate. The author suggests (p. 413) that it will probably form a distinct genus. Of the other species, 9 are described as new. Of the known species *A. rectirostris* (Linn.)=*druparum* (Linn.), *A. rubi* (Herbst) =*obscurus* (Steph.)=*clavatus* (Marsh.), *A. sorbi* (Germ.)=*oxyacanthæ* (Boh.), *A. varians* (Payk.)=*melanocephalus* (Fab.), *A. pedicularius* (Linn.) =*melanocephalus* (Oliv.)=*fasciatus* (Steph.), *A. pomorum* (Linn.)=*incurvus* (Steph.), *A. undulatus* (Gyll.)=*ruber* (Perr.); *A. terreus* (Schönh.) and *helopioides* (Kolen.) are unknown to the author. Desbrochers's genus *Pseudomorphus* is a dismemberment of *Bradybatus* (Germ.), and founded upon *Anth. elongatulus* (Boh.)=*fallax* (Gerst.)=*aceris* (Chevr.); this group has also been proposed by Marseul under the name of *Nothops,* which must be retained, as *Pseudomorphus* is preoccupied. *Bradybatus* includes the 3 known species.

Apion. Pandellé (Mat. pour la Faune des Col. de France, pp. 183–185) gives a synoptical table of the group of species allied to *A. ulicis* (Först.). He includes in this group *A. difficile* (Herbst), *funiculare* (Muls.), *genistæ* (Kirby), *fuscirostre* (Fab.), and 1 new species.

Apion. Frauenfeld (Verh. zool.-bot. Ges. in Wien, xviii. pp. 158–160) notices the metamorphoses of the following species of this genus:—*A. loti* (Kirby), *A. schmidti* (Mill.), *A. fagi* (Linn.), *A. carduorum* (Kirby), *A. miniatum* (Schönh.), and *A. onopordi* (Kirby).

Apion cerdo (Gerst.). Sharp records its occurrence in Britain, Ent. M. Mag. v. p. 124. See also Bold, *l. c.* p. 142.

Kirsch states that the genus *Pandeleterius* belongs to the *Tanymecides* and not to the *Naupactides* (Berl. ent. Zeitschr. 1868, p. 177, note).

Conoproctus quadriplagiatus (Lac.)= *Calandra quadripustulata* (Fab.) according to C. A. Dohrn (Stett. ent. Zeit. 1868, p. 164).

Polydrusus gentilis (Bertolini)=*P. kahrii* (Kirsch). Kraatz, Berl. ent. Zeitschr. 1868, p. 299.

Mecinus longiusculus (Schöuh.) and *teretiusculus* (Schönh.) are the ♀ and ♂ of the same species, *M. filiformis* (Aubé), according to Grenier, Bull. Soc. Ent. Fr. 1868, p. lxxiii.

Orchestes quinquemaculatus (Chevr.)=*semirufus*(Gyll.), according to Brisout de Barneville, Bull. Soc. Ent. Fr. 1868, p. vi.

Marseul maintains the distinctness of *Orchestes 5-maculatus* (Chevr.) from *semirufus*. Bull. Soc. Ent. Fr. 1868, pp. lxxvi–lxxvii.

Orchestes pratensis (Germ.). Frauenfeld (Verh. zool.-bot. Ges. in Wien, xviii. p. 900) notices the metamorphosis of this species. He says that the larvæ live together to the number of ten or twelve, in discoloured patches in the leaves of *Centaurea scabiosa*.

Hypera rogenhoferi (Ferr.) is a distinct species, according to Kraatz, Berl. ent. Zeitsch. 1868, p. 299.

Gerstäcker's descriptions of the species of *Bradybatus* (Germ.) are translated and republished by De Marseul, L'Abeille, v. pp. 261–266. Also descriptions of *Hypoglyptus pictus* (Gerst.) and *gracilis* (Kies.), *l. c.* pp. 267–270.

Gredler describes (Col. Hefte, iii. p. 74), as a variety (*gobanzi*) of *Otiorhynchus maurus*, a Tyrolese form which he thinks may prove to be a distinct species.

Rhynchites megacephalus (Germ.). According to W. Tylden (Ent. M. Mag. v. p. 169) this species occurs in Japan.

Magdalinus duplicatus (Germ.). R. Hislop records the occurrence of this species in Morayshire, and describes its characters. Ent. M. Mag. v. p. 168.

Cathormiocerus socius (Schönh.). Rye refers to the capture of a specimen of this species in the Isle of Wight. Ent. M. Mag. v. pp. 68, 69.

Mesites tardii. Wilkinson records the occurrence of this species in great abundance north of Scarborough. Ent. M. Mag. v. p. 71. J. Sidebotham indicates the localities where he has met with this species (*l. c.* p. 99).

Omias pellucidus (Schönh.) is recorded as British by W. G. Pelerin, Ent. M. Mag. v. p. 44.

Cleonus. A species of this genus has done much injury to the beet-crops about Moscow. Doumerc, Bull. Soc. Ent. Fr. 1868, p. lxxxv.

Barypithes sulcifrons feeds on *Festuca ovina*, according to Hislop, Ent. M. Mag. iv. p. 231.

Conotrachelus nenuphar (Herbst). On the habits of this as an injurious species see Walsh, Pract. Entom. ii. pp. 75–81, where other species, especially *Anthonomus prunicida*, are referred to.

Sitones lineellus feeds on the bird's-foot trefoil, or white clover, according to Hislop, Ent. M. Mag. iv. p. 231.

Pissodes strobi is figured with its larva and pupa in Amer. Natural. ii. p. 164, figs. 2, 2*a*, 2*b*. *Hylobius pales* is also figured, *l. c.* p. 165, fig. 4.

Rhynchænus strobi. Bassett remarks on the habits of this species (Pract. Entom. i. p. 20).

Kirsch notices the habits of *Cossonus ferrugineus* (Clairv.), found by him in all stages in a damaged wooden water-pipe. Sitzungsber. Isis, 1866, p. 9.

Coniatus lætus (Mill.). Frauenfeld describes the larva of this species, which he obtained in the Bukowina, and fed on *Myricaria.* Verh. zool.-bot. Ges. in Wien, xviii. p. 887.

Ceutorhynchus trimaculata (Fab.). Larva noticed by Frauenfeld, Verh. zool.-bot. Ges. in Wien, xviii. p. 161.

New genera:—

Hypsosternus, g. n., Kirsch, Berl. ent. Zeitsch. 1868, p. 194. Allied to *Rhytidoderes* and *Leucomigus.* Sp. *H. setipes*, sp. n., Kirsch, *l. c.* p. 195, Bogotá.

Taractes, g. n., Kirsch, *l. c.* p. 196. Allied to *Peribleptus* and *Paipalesomus.* Sp. *T. chelidon*, sp. n., Kirsch, *l. c.* p. 197, Bogotá.

Epistrophus, g. n., Kirsch, *l. c.* p. 200. Allied to *Heilipus.* Sp. *E. tumidus*, sp. n., Kirsch, *l. c.* p. 201, Bogotá.

Hypogymnius, g. n., Kirsch, *l. c.* p. 211. Allied to *Coryssomerus.* Sp. *H. smaragdinus*, sp. n., Kirsch, *l. c.* p. 212, Bogotá.

Prodotes, g. n., Kirsch, *l. c.* p. 212. Sp. *P. cionoides*, sp. n., Kirsch, *l. c.* p. 213, Bogotá.

Cyriaspis, g. n., Kirsch, Berl. ent. Zeitschr. 1868, p. 177. Sp. *C. rufirostris*, sp. n., Kirsch, *l. c.* p. 179, Bogotá.

Typacrus, g. n., Kirsch, *l. c.* p. 179. Sp. *T. mirus*, sp. n., Kirsch, *l. c.* p. 180, Bogotá.

Mitrasthetus, g. n., Redtenbacher, Reise der Novara, Zool. ii. Col. p. 167. Allied to *Cryptorhynchus.* Sp. *M. baridioides*, sp. n., Redt. *l. c.* p. 168, pl. 4. fig. 13, New Zealand.

Pseudorobitis, g. n., Redtenbacher, *l. c*, p. 162. Allied to *Orobitis*, but with the anterior and intermediate coxæ closely approximated, the flagellum 6-jointed, and no scutellum. Sp. *P. gibbus*, sp. n., Redt. *l. c.* p. 163, Shanghai.

Paranomocerus, g. n., Redtenbacher, *l. c.* p. 168. Allied to *Mecistostylus*, but scape very slightly passing the eyes, prothorax straightly truncate at base, femora unarmed. Sp. *P. spiculus*, sp. n., Redt. *l. c.* p. 169, New Zealand.

Crypharis, g. n., Fairmaire, Ann. Soc. Ent. Fr. 4^{e} sér. viii. p. 498. Allied to *Cryptorhynchus*; eyes 0; body flattened above; rostrum very large, inflexed; prosternum with a deep channel with raised margins; scape ascending nearly to base of rostrum, funiculus of 7 joints, 1 longer and stouter than 2, club oval-acuminate. Sp. *C. planidorsis*, sp. n., Fairm. *l. c.* p. 498, Algeria and Sicily.

Zygopsides, g. n., Marseul, L'Abeille, v. p. 203. Allied to *Coryssomerus*, but with the eyes large, oval, and contiguous, and the head more immersed in the prothorax, which is not constricted. Sp. *Z. berytensis*, sp. n., Mars. *l. c.* p. 201, Beyrouth.

Parameira, g. n., Seidlitz, *l. c.* p. 26. (See table, p. 260.) Sp. *Stomodes rudis* (Sch.)= *O. hispidus* (Stierl.); *P. setosa*, sp. n., Seidlitz, *l. c.* p. 27, Turkey.

Paraptochus, g. n., Seidlitz, *l. c.* p. 35, note. (See table, p. 260.) Sp. *P. californicus*, sp. n., Seidlitz, *l. c.* p. 36, note, California.

New species :—

Barynotus pyrenæus (Dej.), C. Bris. de Barneville, Mat. pour la Faune des Col. de Fr. p. 186, Bagnères de Bigorre.

Strophosomus poricollis, Fairmaire, Ann. Soc. Ent. Fr. 4e sér. viii. p. 493, Tangier.

Liophlæus (sic) *maroccanus*, Fairmaire, *l. c.* p. 494, Tangier.

Sciaphilus pertusicollis, Fairmaire, *l. c.* p. 494, Constantine.

Blosyrus tuberculatus, Redtenbacher, Reise der Novara, Zool. ii. Col. p. 145, Java.

Ancistropterus hochstetteri, Redtenbacher, *l. c.* p. 147, New Zealand.

Otiorhynchus asplenii, L. Miller, Verh. zool.-bot. Ges. in Wien, xviii. p. 26, East Galicia.

Otiorhynchus ventralis, Marseul, L'Abeille, v. p. 194, Lebanon; *O. fallax*, Mars. *l. c.* p. 195, Beyrouth; and *O.* (*Eurychirus*) *coeyi*, Mars. *l. c.* p. 196, Kab-Elias, Syria.

Pholicodes breviusculus, Marseul, *l. c.* p. 196, Lebanon.

Holcorhinus parvicollis, Seidlitz, *l. c.* p. 8, Algeria and Sicily; *H. pygmæus*, Seidlitz, *l. c.* p. 8, Algeria.

Cyclomaurus armipes, Seidlitz, *l. c.* p. 11, Algeria.

Mylacus pustulatus, Seidlitz, *l. c.* p. 17, Turkey; *M. armatus*, Seidlitz, *l. c.* p. 20, Bosphorus; *M. turcicus*, Seidlitz, *l. c.* p. 21, Asia Minor; *M. rhinolophus*, Seidlitz, *l.* c. p. 22, Andalusia.

Peritelus (*Meira*) *leptosphæroides*, Seidlitz, *l. c.* p. 32, Algeria.

Omias micans, Seidlitz, *l. c.* p. 55, south of France; *O. cypricus*, Seidlitz, *l. c.* p. 56, Cyprus; *O. metallescens*, Seidlitz, *l. c.* p. 57, Sicily, Algeria.

Barypeithes. Seidlitz (*l. c.*) describes the following new species of this genus:—*B. globus*, p. 65, Transylvania; *B. virguncula*, p. 66, Austria, Illyria; *B. stiriacus*, p. 69, Styria; *B. violatus*, p. 70, Eastern France; *B. scydmænoides*, p. 72, Tuscany.

Platytarsus aurohirtus, Seidlitz, *l. c.* p. 85, Turkey; *P. subnudus*, Seidlitz, *l. c.* p. 88, Austria; *P. transsylvanicus*, Seidlitz, *l. c.* p. 90, Transylvania.

Trachyphlœus. Of this genus Seidlitz (*l. c.*) describes the following new species:—*T. pustulatus*, p. 101, Spain; *T. reichei*, p. 102, Tangier; *T. godarti*, ibid., Algeria; *T. cruciatus*, p. 103, Algeria; *T. orbitalis*, p. 104, Algeria; *T. parallelus*, p. 106, Hungary; *T. truquii*, p. 109, Cyprus; *T. rugicollis*, p. 114, Dalmatia, Roumelia; *T. gracilicornis*, p. 115, Syria; *T. ypsilon*, ibid., Hungary, Turkey; *T. setiger*, p. 118, Spain, south of France, Sicily, Algeria; *T. algerinus*, p. 119, Algeria; *T. myrmecophilus*, p. 125, Spain; *T. guadarramus*, ibid., Spain; *T. granulatus*, p. 127, south of France; and *T. syriacus*, p. 128, Syria.

Cathormiocerus. Seidlitz (*l. c.*) describes the following new species of this genus:—*C. cordicollis*, p. 132, Pyrenees; *C. curviscapus*, p. 134, Spain, Algeria; *C. chevrolati*, p. 135 (= *Trach. socius*, Chevr.), Spain; *C. gracilis*, p. 140, Spain; *C. irrasus*, p. 142, Spain; *C. pygmæus*, p. 143, Spain.

Myllocerus modestus, Redtenbacher, *l. c.* p. 149, Nicobars (Sambelong); *M. psittacinus*, Redt. *l. c.* p. 150, Hong Kong.

Piezonotus albosetosus, Redtenbacher, *l. c.* p. 148, Punipet.

Polydrosus gentilis, Bertolini, Verh. zool.-bot. Ges. in Wien, xviii. p. 120, near Trient.

Polydrosus (*Eustotus*) *cedri*, Marseul, L'Abeille, v. p. 193, Algeria.

Phytobius muricatus, C. Bris. de Barneville, Mat. pour la Faune des Col. de Fr. p. 187, Marey.

Bastactes conifer, Redtenbacher, *l. c.* p. 151, Rio de Janeiro.

Anisorhynchus carinicollis, Fairmaire, *l. c.* p. 497, Tangier.

Anchonus. Kirsch (*l. c.*) describes the following new species of this genus from Bogotá, and indicates their sexual differences (p. 181):—*A. libertinus*, p. 181; *A. gracilis*, p. 182; *A. immundus*, p. 183; *A. dolosus*, ibid.; *A. buceros*, p. 184; *A. rufus*, p. 185; *A. pararius*, p. 186; *A. aratus*, p. 187; *A. necopinus*, ibid.; *A. lixoides*, p. 188; *A. diapyrus*, p. 189; *A. luctuosus*, p. 190; *A. lineatus*, p. 191; *A. mediocris*, p. 192; *A. concretus*, ibid.; *A. constrictus*, p. 193; *A. modestus*, ibid.; and *A. fasciculatus*, p. 194.

Oxyops fasciculatus, Redtenbacher, *l. c.* p. 155, Sydney.

Leiosomus discontignyi, *L. pyrenæus*, and *L. pandellei*, C. Bris. de Barneville, *l. c.* pp. 189, 190, 191, Pyrenees.

Hypera. Capiomont (Ann. Soc. Ent. Fr. 4^e^ sér. viii.) describes the following new species of this genus:—(Subg. Brachypera, type *Phyt. crinitus*, Schönh.) *H. iberica*, p. 76, south of Spain; *H. porcella* (Schönh. MS.), p. 78, Greece and Rhodes; *H. barnevillei*, p. 79, Pyrenees; *H. fairmairei*, p. 81, Lozère; *H. dubia*, p. 82, Lozère; *H. rudicollis*, ibid., Portugal; *H. sierrana*, p. 83, Sierra Nevada; *H. piochardi*, p. 85, Basses-Alpes; *H. hispanica*, p. 86, pl. 3. fig. 2, Spain; *H. delarouzei*, p. 87, Pyrenees; *H. lusitanica*, p. 89, Portugal; *H. montivaga*, p. 91, Sierra Nevada; *H. perrisi*, p. 93, Spain; *H. guttipes* (Chevr. MS.), p. 97, Algiers; *H. chevrolati*, p. 97, Algeria; *H. deyrollei*, p. 99, Portugal; *H. tumida* (Dej.), p. 101, Spain; *H. perplexa* (Dej.), p. 105, Spain; *H. marmottani*, p. 107, Algeria; *H. hierichontica*, p. 109, Jericho: (Subg. Pseudhypera) *H. reichei*, p. 111, Greece; *H. saulcyi*, p. 113, Syria.

Phytonomus. Of this genus, as restricted by him (see 'Record,' 1867, p. 276), Capiomont (*l. c.*) describes the following new species:—(Subg. 1. Donus, type *P. punctatus*, Fab.) *P. brevirostris*, p. 117, note, Spain; *P. fallax*, p. 124, pl. 2. fig. 2, Andalusia; *P. leprieuri*, p. 125, Algeria; *P. grandini*, p. 131, Algeria: (Subg. 2. Metadonus, type *P. anceps*, Schönh.) *P. veuillefroyanus*, p. 135, pl. 1. fig. 9, 9 bis, south of Spain; *P. heydeni*, p. 141, Mongolia, Dauria; *P. decipiens*, p. 144, Caucasus; *P. brevicollis*, p. 147, Sarepta: (Subg. 3. Erirhinomorphus, type *Curc. rumicis*, Linn.) *P. bohemanni*, p. 158, pl. 4. fig. 3. Algeria: (Subg. 4. Dapalinus, type *Curc. meles*, Fab.) *P. subvittatus* (Chevr. MS.), p. 166, pl. 4. fig. 5, Greece, Syria; *P. tychioides*, p. 168, Sarepta: (Subg. 5. Tigrinellus, type *Phyt. pastinacæ*, Rossi) *P. olivieri*, p. 181 (=*pastinacæ*, Oliv., Schönh.), Persia, Cyprus, Sardinia, Corsica, Algeria; *P. albicans*, p. 183, south of Europe, Algeria; *P. poupillieri*, p. 186, Algeria: (Subg. 6. Phytonomus pr., type *Curc. murinus*, Fab.) *P. pandellei*, p. 189, pl. 4. fig. 6, Pyrenees; *P. lepidus* (Schönh. MS.), p. 198, Dauria; *P. subcostatus*, p. 202, Shanghai; *P. ponticus*, p. 208, Tarsous; *P. ægyptiacus*, p. 209, Alexandria; *P. ornatus*, p. 210, Western Siberia; *P. denominandus*, p. 211, Dalmatia to South Russia: (Subg. 7. Phytonomidius, type *Rhynch. nigrirostris*, Fab.) *P. sinuatus* (Schönh. MS.), p. 217, Mesopotamia, Hindostan; *P. stierlini*, p. 223, Alps;

P. jucundus, p. 231, Algeria, Sicily, Egypt, Tarsous; *P. gracilentus*, p. 233, Algeria; *P. scolymi*, p. 234, pl. 3. fig. 7, Sicily, Spain, Algeria; *P. lethierryi*, p. 242, pl. 3. fig. 6, Escurial; *P. egregius*, p. 243, Algeria.

Limobius hampei, Capiomont, *l. c.* p. 250, Transylvania.

Coniatus. Capiomont (*l. c.*) describes the following new species of this genus:—*C. deyrollei*, p. 256, Andalusia, South of France; *C. wenckeri*, p. 260, Strasburg; *C. saulcyi*, p. 261, Egypt; *C. ægyptiacus* (A. Deyr. MS.), p. 262, Upper Egypt; *C. steveni* (Schönh. MS.), p. 270; *C. ionicus* (Chevr. MS.), p. 271, Corfu.

Leucochromus gigas, Marseul, L'Abeille, v. p. 197, Algerian Sahara.

Stephanocleonus amori, Marseul, *l. c.* p. 199, origin not stated.

Bothynoderes soricinus, Marseul, *l. c.* p. 200, Algeria.

Cleonus. Fairmaire describes the following new species from Algeria:—*C. basigranatus*, *l. c.* p. 495; *C. ellipticus*, ibid.; *C. cretosus*, *l. c.* p. 496; *C. albotessellatus*, *l. c.* p. 497.

Lixus schoenherri, Redtenbacher, *l. c.* p. 158, pl. 4. fig. 11, Cape of Good Hope.

Lixus manifestus, Kirsch, *l. c.* p. 198, and *L. sulcatus*, Kirsch, *l. c.* p. 199, Bogotá.

Heilipus bisignatus, Redtenbacher, *l. c.* p. 159, Chili.

Heilipus. Kirsch (*l. c.*) describes the following new species of this genus from Bogotá:—*H. albosignatus*, p. 202; *H. limus*, ibid.; *H. fossifrons*, p. 203; *H. ater*, p. 204; and *H. immundus*, p. 205.

Erirhinus juniperinus, Sanborn, Proc. Bost. Soc. Nat. Hist. xii. p. 81, Massachusetts.

Ambates salamandra, Kirsch, *l. c.* p. 206, *A. perspicillum*, Kirsch, *l. c.* p. 207, and *A. posticus*, Kirsch, *l. c.* p. 208, Bogotá.

Cylindrorhinus costatus, Redtenbacher, *l. c.* p. 154, Chili.

Oxycorynus hydnoræ, Pascoe, Proc. Ent. Soc. Lond. 1868, p. xiv; Catamarca.

Apion uliciperda, Pandellé, Mat. pour la Faune des Col. de Fr. p. 184, Tarbes, Toulouse.

Apion gautardi, Tournier, L'Abeille, v. p. 146, Sicily; *A. superbum*, Tourn. *l. c.* p. 147, Egypt.

Rhynchites congrua, Walker, Lord's Naturalist in Vancouver's Island &c. ii. p. 331, Vancouver's Island.

Auletes tessoni, Mulsant and Rey, Ann. Soc. Linn. Lyon, n. s. xv. p. 407, Lyons.

Apoderus bicolor, Redtenbacher, *l. c.* p. 161, Shanghai.

Balaninus propinquus, Desbrochers des Loges, *l. c.* p. 345, Constantinople; *B. sericeus*, Desbr. des Loges, *l. c.* p. 349, south of France; *B. reichei*, Desbr. des Loges, *l. c.* p. 350, south of Europe and Levant.

Anthonomus bonvouloiri, Desbrochers des Loges, *l. c.* p. 421, Rome; *A. sibiricus*, Desbr. des Loges, *l. c.* p. 423, Altai; *A. pyrenæus*, Desbr. des Loges, *l. c.* p. 428, Pyrenees; *A. britannus*, Desbr. des Loges, *l. c.* p. 429, England; *A. chevrolati*, Desbr. des Loges, *l. c.* p. 430, England, France, Algiers; *A. pruni*, Desbr. des Loges, *l. c.* p. 439, France; *A. distinguendus*, Desbr. des Loges, *l. c.* p. 444, north of France; *A. conspersus* (Rey, MS.), Desbr. des Loges, *l. c.* p. 445, France, England; *A. kirschi*, Desbr. des Loges, *l. c.* p. 446, Austria.

Anthonomus biplagiatus, Redtenbacher, *l. c.* p. 161, Madeira?, Brazil.

Anthonomus formosus, Kirsch, *l. c.* p. 209, *A. mirus*, Kirsch, ibid., and *A. humeralis*, Kirsch, *l. c.* p. 210, Bogotá.

Sibynes meridionalis, C. Bris. de Barneville, *l. c.* p. 192, Nice &c.

Rhyncolus grandicollis, C. Bris. de Barneville, *l. c.* p. 193, Pyrenees.

Otidocephalus inquisitus, Kirsch, *l. c.* p. 208, Bogotá.

Dionychus margaritifer, Redtenbacher, *l. c.* p. 164, Rio de Janeiro.

Cœlosternus bipunctatus, Redtenbacher, *l. c.* p. 165, Nicobars (Nankauri).

Diceroderes elongatus, Redtenbacher, *l. c.* p. 167, pl. 4. fig. 4, Java.

Enteles ocellatus, Redtenbacher, *l. c.* p. 166, pl. 4. fig. 12, Sidney.

Tachygonus centralis, Leconte, Trans. Amer. Ent. Soc. ii. p. 55, Trinchera Pass.

Sphenophorus zeæ, Walsh, Pract. Entom. ii. p. 117, New York, destructive to maize.

Cossonus præustus, Redtenbacher, *l. c.* p. 171, Sydney.

Anthribidæ.

Anthribus phymatodes, sp. n., Redtenbacher, Reise der Novara, Zool. ii. Col. p. 174, New Zealand.

Choragus grenieri, sp. n., C. Bris. de Barneville, *l. c.* p. 185, Sainte-Baume.

Nessiaro bistria, sp. n., Pascoe, Proc. Ent. Soc. Lond. 1868, p. xi, Manilla.

Bruchidæ.

Bruchus. Kraatz (Berl. ent. Zeitschr. 1868, pp. 215–218) publishes remarks on some species of this genus. *B. halodendri* (Gebl.) is probably an immature form or local variety of *B. glycyrrhizæ* (Schönh.); *B. eryngii* (Bris.) differs only in its larger size and slenderer antennæ from *B. cinerascens*, and Kraatz thinks these characters insufficient; *B. musculus* (Solsky) also = *B. cinerascens*; *B. 4-plagiatus* (Motsch.) sometimes has the elytra red; *B. flavescens* (Luc.) probably = *B. albolineatus* (Blanch.); *B. plumbeus* (Luc.) is probably described from specimens of *B. velaris* (Sch.) with obsolete markings on the elytra; *B. picipes* (Germ.) = *siculus* and *basalis* (Sch.); *B. obsoletus* (Blanch.) or *B. retamæ* (Vogel) = *B. lividimanus* and *velaris* (Sch.); *B. lividimanus* (Redt.) probably = *B. pusillus* (Germ.); *B. tarsalis* (Sch.) = *B. varius* (Sch.), var.

Bruchus retamæ. Vogel (Berl. ent. Zeitschr. 1868, p. 397) reasserts his claim to be regarded as the original describer of this species, as Blanchard's character of *B. obsoletus*, with which *B. retamæ* (Vog.) has been identified, is insufficient for determination. Kraatz (*l. c.* p. 398) adds some remarks upon the general question of right of priority raised by Vogel, and expresses his opinion that names accompanied by insufficient descriptions should be treated as MS. names.

Bruchus. Kraatz (Berl. ent. Zeitschr. 1868, pp. 313–324) discusses the characters of *B. pallidicornis* (Schönh.) and some allied species, and indicates that the individuals with yellow antennæ are males, and that from this character having been ascribed to both sexes considerable confusion has arisen. He tabulates the characters of the following species (*l. c.* p. 323): —*B. ulicis*, *nubilus* (Schönh.), *sertatus* (Sch.), *signaticornis* (Sch.), *pallidicornis* (Sch.) = *sertatus* (Rey), *brachialis* (Sch.) = *pallidicornis* (Rey), and two new species described by him.

Kraatz also adds several species to the list of German species (*l. c.* pp. 324–330) and remarks upon the characters and distribution of these and others. The new German species are 8 in number, namely :—*B. pectinicornis* (Linn.) =*scutellaris* (Fab.), *pallidicornis* (Sch.), *brachialis* (Sch.), *troglodytes* (Sch.), *pusillus* (Germ.), *steveni* (Sch.)=*canaliculatus* (Rey), *misellus* (Sch.)=*biguttatus* (Ol.), var., and *miser* (Sch.)=*foveolatus* (Sch.). This raises the number of German species to 34. *B. fahræi* (Sch.) probably=*nigripes*, var.; *B. fulvipennis* (Germ.)=*biguttatus* (Ol.); *B. longicornis* (Rey)=*quinqueguttatus* (Ol.).

Urodon rufipes (Fab.). The metamorphoses of this species are briefly described by Frauenfeld, Verh. zool.-bot. Ges. in Wien, xviii. p. 160.

Bruchus pisi. Rye notices the characters and habits of this species. Ent. M. Mag. v. p. 20.

Geinitz notices the occurrence of *Bruchus pisi* in such numbers as to destroy thirty per cent. of the peas in the vicinity of Kötschenbroda (Sitzungsber. Isis, 1867, p. 19).

Bruchus perezii, sp. n., Kraatz, Berl. ent. Zeitschr. 1868, p. 321, Madrid; *B. brisoutii*, sp. n., Kraatz, *l. c.* p. 322, Collioures.

Urodon tigrinus, sp. n., Redtenbacher, Reise der Novara, Zool. ii. Col. p. 175, Cape of Good Hope.

Brenthidæ.

Trachelizus helmenreichii, sp. n., Redtenbacher, Reise der Novara, Zool. ii. Col. p. 172, Brazil.

Scolytidæ.

Leconte has published (Trans. Amer. Ent. Soc. ii. pp. 141–149) a synopsis of the North-American species of this family prepared by the late C. Zimmermann. A short sketch of Zimmermann's systematic view will suffice here. Zimmermann denominates the family Hylurgidæ, and divides it into 3 tribes, namely :—

I. Bostrychi, with the tarsi filiform, evidently 5-jointed, and the rostrum obsolete, including the genera *Platypus*, *Crypturgus*, *Xyloterus*, and *Bostrychus* (=*Tomicus*).

II. Eccoptogasteres, with joint 3 of tarsi bilobed, the rostrum very short and thick, and the ventral segments of the abdomen excavated: genus *Eccoptogaster*.

III. Hylurgi, like the preceding, but abdomen cylindrical, including *Phlœotribus*, *Hylesinus*, *Dendroctonus*, and *Hylurgus*.

The known species described by Zimmermann in this memoir are :—under *Crypturgus*—*Bostr. fasciatus* (Say), *Tom. mali* (Fitch), and *T. materiarius* (Fitch); under *Xyleborus*—*Scol. pyri* (Peck), *X. celsus* (Eichh.), *fuscatus* (Eichh.), *Bostr. xylographus* (Say), and *X. cælatus* (Eichh.); under *Bostrichus*—*Tom. avulsus* (Eichh.), *B. pini* (Say), and *B. exesus* (Say); under *Phlœotribus*—*Scol. frontalis* (Oliv.)=*P. setulosus* and *dubius* (Eichh.), *Hylesinus aculeatus* (Say); under *Dendroctonus*—*Carphoborus bifurcus* (Eichh.), *Scol. terebrans* (Oliv.), and *Bostr. frontalis* (Fab.); and under *Hylurgus*—*Hylastes tenuis* (Eichh.).

Leconte's appendix to Zimmermann's posthumous memoir (*l. c.* pp. 150–

178), besides the descriptions of numerous new species, contains a general account of the North-American forms of this family and a scheme of generic classification which, as it differs in some respects from those proposed by other authors, may be reproduced here. The tribes, into which Leconte divides the family, are *Platypini*, *Tomicini*, *Scolytini*, and *Hylurgini* (this is evidently the case from his treatment, although the third group, including only the genus *Scolytus*, is not indicated by him). Of the *Platypini*, Leconte cites 9 North-American species of *Platypus*, for the characters of which he refers to the monograph of Chapuis. The *Tomicini* are divided by him into the following genera :—

I. Head not completely concealed by the prothorax from above; prothorax not tuberculate in front.
  A. Club large, flat, not annulated; funiculus 2-jointed. 1. Crypturgus (Erichs.).
  B. Club smaller, oval, annulated; funiculus 3-jointed. 2. Aphanarthrum (Woll.).

II. Head completely overhung by prothorax, which is very convex and tuberculate in front.
  A. Club of antennæ large, much compressed, transversely annulated on both surfaces; funiculus 1–5-jointed 3. Cryphalus (Erichs.).
  B. Club of antennæ large, rounded, entirely corneous on one side, circularly annulated on the other, or solid.
    a. Eyes divided; club solid..... 4. Xyloterus (Erichs.).
    b. Eyes emarginate; club annulate .. 5. Xyleborus (Eichh.).
  C. Club of antennæ entirely corneous on one side, transversely annulated on the other; sutures undulated.
    a. Elytra deeply excavated at tip; margin of excavation strongly toothed ..... 6. Tomicus (Lat.).
  D. Club of antennæ pubescent, except an elongated space reaching from base to middle; sutures loop-shaped, parallel with the smooth space ..... 7. Micracis, g. n.

To *Aphanarthrum* Leconte refers *Hylastes pumilus* (Mann.) from Alaska, the type of *Dolurgus* (Eichh., *vide infrà*); Leconte says the funiculus contains only 3 joints instead of 4 as described by Eichhoff. *Cryphalus* includes *Corthylus* (Erichs.) and *Corthylomimus* (Ferr.), forming the author's first group, containing *C. fasciatus*, *mali*, and *punctatissimus* (Zimm., *vide infrà*), *scutellaris* (Lec.), and the first two new species described by Leconte; the second group, with the funiculus 2-jointed, includes *C. dissimilis* (Zimm.), which Leconte compares with *Hypothonemus* (J.-Duv.); the third group, having the funiculus 4- or 5-jointed, contains the greater part of the species, namely of previously described species, *Tom. materiarius* (Fitch), *T. pubipennis* (Lec.), and *Bostr. nitidulus* (Mann.), also *Crypturgus minutissimus*, *comatus*, *pullus*, and *pulicarius* (Zimm.), and the rest of Leconte's new species. *C. pullus*, *pulicarius*, *atratulus*, *nitidulus*, and *asperulus* belong to *Trypophlœus* (Fairm.). *Xyloterus* includes *Apate bivittatus* (Kirby)=*Bostr. cavifrons* (Mann.), *X. scabricollis*, and *Bostr. politus* (Say). To *Xyleborus* Leconte refers *Scolytus pyri* (Harr.), *Bostr. xylographus* (Say)=*pini* (Eichh.), *Bostr. septentrionis* (Mann.)=*B. semicastaneus* (Mann.) and *B. affaber* (Mann), the last two, with *X. granicollis* (Lec.), belonging to *Dryocœtes* (Eichh.); the other species are described as new by Zimmermann and Leconte. *Tomicus* agrees

with the genus of that name as restricted by Eichhoff and with *Bostrychus* (Zimm.). The known species referred to it by Leconte are *T. calligraphus* (Germ.)=? *exesus* (Say)=*præmorsus* (Eichh.), *Bostr. pini* (Say)=*præfrictus* (Eichh.), *Bostr. interruptus*, *tridens*, and *concinnus* (Mann.), and *T. avulsus* (Eichh.). The Scolytini, as already stated, are represented only by the genus *Scolytus*, to which Leconte refers seven species, three of them described as new; the others are *S. quadrispinosus* (Say), *fagi* (Walsh, Pract. Entom. ii. p. 58), *caryæ* (Riley, Prairie Farmer, 1867; Walsh, Pract. Entom. ii. p. 58), and *S. muticus* (Say).

Of the *Hylurgini* Leconte tabulates the genera as follows (*l. c.* p. 168):—

I. Club of antennæ large, much compressed, uniformly pubescent; joint 3 of tarsi not dilated, scarcely emarginate.
  A. Funiculus very short, 1-jointed .... 1. Chramesus, g. n.
  B. Funiculus longer, 5-jointed ..... 2. Polygraphus (Erichs.).
II. Club of antennæ lamellate ..... 3. Phlœotribus (Lat.).
III. Club of antennæ annulated.
  A. Ventral segments subequal.
    a. Club oval, elongate, or fusiform.
      1. Front tibiæ serrate..... 4. Hylesinus (Fab.).
      2. Front tibiæ coarsely toothed.... 5. Cnesinus, g. n.
    b. Club oval, smaller, subacute.
      1. Tarsi with joints 1–3 equal .... 6. Hylurgus (Lat.).
      2. Tarsi with joint 1 shorter ..... 7. Carphoborus (Eichh.).
    c. Club short, broad, compressed, and concave. 8. Dendroctonus (Erichs.).
  B. Ventral segments 1 and 5 elongate, sutures very deeply impressed; club small, oval, basal half glabrous 9. Hylastes (Erichs.).

To *Polygraphus* Leconte refers only *Apate rufipennis* (Kirby)+*nigriceps* (Kirby)=*P. saginatus* (Mann.). *Hylesinus* includes ten species, two described as new. The known species are *H. imperialis* (Eichh.), *sericeus* (Mann.), *dentatus* (Say), and *nebulosus*, *serratus*, *cristatus*, and *hystrix* (Lec.). *Hylurgus* includes only one new species, the species described under this genus by Zimmermann (*vide infrà*) belonging to *Hylastes*. *Carphoborus* includes only *C. bifurcus* (Eichh.). To *Dendroctonus* six species are referred, namely *D. terebrans* (Lec.)=*valens* (Lec.), *Hylurgus obesus* (Mann.)=*D. similis* (Lec.), *Hyl. rufipennis* (Kirby) and three new species described by Leconte and Zimmermann. Under *Hylastes*, which he regards as approaching most closely to the Cossonide Curculionidæ, Leconte cites eleven North-American species, six described as new by himself and Zimmermann (*vide infrà*) and the following known species:—*H. porculus* (Erichs.)=*scabripennis* (Zimm.), *nigrinus* (Mann.), *pinifex* (Fitch), *rugipennis* (Mann.), and *subcostulatus* (Mann.). Leconte gives a list of fourteen described North-American species with which he is unacquainted.

Monarthrum. Kirsch (Berl. ent. Zeitschr. 1868, p. 214) discusses the affinities of this genus, which he says must either be placed with *Microcorthylus* as a subgenus of *Corthylus*, or, if Ferrari's subgenera *Pseudocorthylus* and *Microcorthylus* be raised to generic rank, be also maintained as a distinct genus.

Ferrari publishes (Berl. ent. Zeitschr. 1868, pp. 251–255) notes on the following described species of this family which were unknown to him in nature

when he wrote his memoir on these insects :—1. *Bostrichus sidneyanus* (Nördl.) is a *Cryphalus*, and Ferrari gives its detailed diagnosis (*l. c.* p. 252); 2. *Bostr. plumeriæ* (Nördl.) is also a *Cryphalus* and belongs to the subgenus *Ernophorus*; 3. *Bostr. hondurensis* (Nördl.) is founded upon a damaged specimen made up of portions of two species—the abdomen probably belonged to the ♀ of a species of *Xyleborus*, and the thoracic part to a true *Tomicus*; 4. *Tomicus nobilis* (Woll.) belongs to the subgenus *Cyrtotomicus* and is probably a large local form of *T. duplicatus* (Sahlb.); 5. *Aphanarthrum jubæ*, *canariense*, and *euphorbiæ* (Woll.) appeared to Ferrari to have the flagellum 2-jointed, *A. luridum* "indistinctly 3-jointed;" 6. *Liparthrum bituberculatum*, var. β (Woll.), has the flagellum 4-jointed and the club triannulate; 7. *Crypturgus concolor* (Woll.) may be a local form of *C. pusillus* (Gyll.).

Ferrari remarks as follows (*l. c.* pp. 255–256) upon genera and species noticed in his above-mentioned work:—1. *Aphanarthrum* should follow *Cryphalus*; 2. *Bostrichus ruficollis* (Fab.) = *Hypothenemus eruditus*; 3. *Xyloterus* (Er.) and *Trypodendron* (Steph.) should be combined, as Eichhoff has described intermediate forms from America; 4. *Cryphalus fagi* (Döbn.) = *Ernophorus fagi* (Thoms.), consequently *Ernophorus thomsoni* (Ferr.) = *E. fagi* (Nördl.), and *Cryphalus fagi* must be cancelled; 5. The position of *Bostr. chalcographus* and *bidens* in the genus *Pityophthorus* is doubtful, but Eichhoff's reference of them to *Tomicus* is less admissible; 6. For *Onthotomicus* read *Orthotomicus*. Ferrari concludes (*l. c.* pp. 257–258) with some remarks on criticisms of his memoir.

Doebner remarks (Berl. ent. Zeitschr. 1868, p. 368) that *Cryphalus thomsoni* (Ferr.) is identical with *C. fagi* (Nördl.).

Eichhoff (Berl. ent. Zeitschr. 1868, p. 274) describes *Tomicus interruptus* (Mann.) and *T. tridens* (Mann.).

Figures of *Hylurgus terebrans* and *Tomicus xylographus* are given in Amer. Natural. ii. p. 165, figs. 3 & 5.

A species of *Tomicus* has been found by Bidie in coffee-plantations in Southern India. It does considerable mischief by boring the young fruit-bearing wood. Proc. Ent. Soc. Lond. 1868, p. 29.

T. A. Chapman notices the habits of some species of *Hylesinus*. Ent. M. Mag. iv. p. 231, v. pp. 20 & 120–123.

Morley records (Ent. M. Mag. iv. p. 187) the capture near Manchester of a species which he supposed to be *Dryocœtes villosus*. Rye regards the insect as *Ips fuscus* (Marsh.), which has been unknown since its original description (*l. c.* pp. 187–189). Rye also states that *Tomicus flavus* (Wilkin) is represented in Stephens's Cabinet by an immature specimen of *T. dryographus* (*l. c.* p. 189).

New genera:—

Micracis, g. n., Leconte, *l. c.* pp. 152 & 164. (See table, p. 270.) Sp. *M. suturalis*, sp. n., Leconte, *l. c.* p. 165, Illinois; *M. aculeatus*, sp. n., Lec. ibid., Southern States.

Chramesus, g. n., Leconte, *l. c.* p. 168. (See table, p. 271.) Sp. *C. hicoriæ*, sp. n., Leconte, ibid., Pennsylvania and Louisiana.

Cnesinus, g. n., Leconte, *l. c.* p. 171. (See table, p. 271.) Sp. *C. strigicollis*, sp. n., Leconte, ibid., Illinois.

Dolurgus, g. n., Eichhoff, Berl. ent. Zeitschr. 1868, p. 147. Sp. *Hylastes pumilus* (Mann.).

Pagiocerus, g. n., Eichhoff, *l. c.* p. 148. Sp. *P. rimosus*, sp. n., Eichh. ibid., Cuba; and *P. cribricollis*, sp. n., Eichh. ibid., Brazil.

Cnemonyx, g. n., Eichhoff, *l. c.* p. 150. Sp. *C. galeritus*, sp. n., Eichh. ibid., Chili.

Bothrosternus, g. n., Eichhoff, *l. c.* p. 150. Sp. *B. truncatus*, sp. n., Eichh. ibid., Venezuela.

Gnathotrichus, g. n., Eichhoff, *l. c.* p. 275. Sp. *G. corthyloides*, sp. n., Eichhoff, *l. c.* p. 275, Carolina (perhaps identical with *Tomicus materiarius*, Fitch).

Pterocyclon, g. n., Eichhoff, *l. c.* p. 276 (=*Monarthrum*, Kirsch; *Corthylomimus* and *Corthylus*, Ferr.). Sp. *Bostrichus fasciatus* (Say), *Monarthrum chapuisi* (Kirsch), *Corthylus scutellaris* (Leconte), and most of Ferrari's species of *Corthylus*. Sp. n. *P. elegans*, Eichhoff, *l. c.* p. 277, *P. quadridens*, Eichh. ibid., *P. dubium*, Eichh. ibid., *P. lævigatum*, Eichh. *l. c.* p. 278, Brazil; *P. simile*, Eichh. *l. c.* p. 277, *P. longulum*, Eichh. *l c.* p. 278, North America; *P. brunneum*, Eichh. ibid., *P.*? *ingens*, Eichh. ibid., and *P. volvulum* (Chap. MS.), Eichh. *l. c.* p. 279, Columbia; *P. laterale*, Eichh. *l. c.* p. 278, Mexico.

New species:—

Xyleborus. Zimmermann describes the following new North-American species:—*X. tachygraphus*, *l. c.* p. 144, North Carolina (also Pennsylvania, Leconte); *X. pubescens*, *l. c.* p. 145, Southern States; *X. planicollis*, ibid., Pennsylvania; and *X. retusicollis*, *l. c.* p. 146, Maryland.

Xyleborus. Eichhoff describes the following new species of this genus (Berl. ent. Zeitschr. 1868):—*X. spathipennis*, p. 144, Peru and Brazil; *X. ruber*, *dichrous*, and *gracilis*, ibid., *X. setosus* and *bispinatus*, p. 146, from Brazil; *X. torquatus*, ibid., Cuba, Brazil, and Porto Rico; *X. retusus*, p. 151, New Freiburg; *X. xanthopus*, ibid., Cape of Good Hope; *X. solidus*, ibid., Australia; *X. fornicatus*, ibid., and *X. carinipennis*, *parvulus*, and *kraatzii*, p. 152, Ceylon.—*X. declivis* (Chap.), *l. c.* p. 280, Teapa; *X. amplicollis* (Chap.), ibid., Porto Rico; *X. alternans* (Chap.), ibid., St. Domingo; *X. propinquus*, *l. c.* p. 281, North America; *X. posticus* (Chap.), ibid., Caraccas; *X. grandis* (Chap.), ibid., Columbia; *X. subcostatus* (Chap.), ibid., Siam; *X. curtulus* (Chap.) and *X. rufithorax* (Chap.), ibid., and *X. squamulatus* (Chap.), *l. c.* p. 282, Brazil; *X. capucinus* (Chap.), *l. c.* p. 281, Guadeloupe; *X. retusus* (Chap.), *l. c.* p. 282, New Freiburg; *X. insignis* (Chap.), ibid., Cayenne; *X. abnormis*, ibid., Ceylon; *X. horridus*, ibid., Mexico; and *X. badius* (Dupont), *l. c.* p. 280, Madagascar and Mauritius.

Hylastes scobinosus, Eichhoff, *l. c.* p. 146, *H. salebrosus*, Eichh. ibid., and *H. rufipes*, Eichh. *l. c.* p. 147, Carolina; and *H. tenuis*, Eichh. *l. c.* p. 147, North America.

Hylastes gracilis, Leconte, *l. c.* p. 174, California; *H. macer*, Leconte, *l. c.* p. 175, California, Nebraska; *H. porosus*, Leconte, ibid., California; and *H. granulatus*, Leconte, ibid., Oregon.

Hylurgus scabripennis, Zimmermann, *l. c.* p. 149 [=*porculus* (Er.) and probably *carbonarius* (Fitch), according to Leconte], and *H. cavernosus*, Zimm. ibid., Atlantic States.

Hylurgus analogus, Leconte, *l. c.* p. 172, New York.

Carphoborus bifurcus, Eichhoff, *l. c.* p. 147, North America.

Dendroctonus (?) *graniger*, Eichhoff, *l. c.* p. 147, Texas; *D.* (?) *haagii*, Eichh. *l. c.* p. 148, North America.

Dendroctonus punctatus, Leconte, *l. c.* p. 173, New York; *D. simplex*, Leconte, ibid., Canada.

Phlœoborus granosus, Eichhoff, *l. c.* p. 148, and *P. sulcifrons*, Eichh. ibid., Brazil; *P. imbricornis* (Chevr. ?), Eichh. ibid., Mexico.

Hylesinus (?) *globosus*, *pruinosus*, and *imperialis*, Eichh. *l. c.* p. 149, North America.

Hylesinus fasciatus, Leconte, *l. c.* p. 170, Pennsylvania; *H. opaculus*, Leconte, ibid., Pennsylvania.

Phlœophthorus granicollis, Eichhoff, *l. c.* p. 149, North America.

Phlœotribus rudis, Eichhoff, *l. c.* p. 149, Brazil; *P. setulosus*, Eichh. ibid., Carolina; and *P. dubius*, Eichh. *l. c.* p. 150, Columbia.

Crypturgus. Zimmermann describes the following new North-American species of this genus:—*C. comatus*, *l. c.* p. 143, South Carolina; *C. minutissimus*, ibid., Carolina [also in the north, and probably = *Tom. pusillus* (Harr.) according to Leconte]; *C. pullus*, ibid., South Carolina; *C. pulicarius*, *l. c.* p. 144; *C. punctatissimus*, ibid., South Carolina; and *C. dissimilis*, ibid., South Carolina (also Lake Superior, Leconte).

Crypturgus atomus, Leconte, *l. c.* p. 152, New York.

Cryphalus. Leconte, describes the following new North-American species:—*C. cavus*, *l. c.* p. 153, California; *C. dentiger*, *l. c.* p. 154, California; *C. retusus*, *l. c.* p. 155, California, Oregon; *C. sulcatus*, ibid., California; *C. asperulus*, ibid., Virginia; *C. pilosulus*, *l. c.* p. 156, California; *C. hispidulus*, ibid., Columbia, Georgia, Louisiana; *C. striatus*, ibid., California to Illinois; *C. atratulus*, ibid., California; and *C. puberulus*, *l. c.* p. 157, Columbia.

Xyloterus retusus, Leconte, *l. c.* p. 158, Canada.

Xyleborus. Leconte describes the following new North-American species:—*X. obesus*, *l. c.* p. 159, Virginia, Massachusetts, Canada; *X. biographus*, *l. c.* p. 160, Illinois; *X. sparsus*, ibid., Lake Superior; *X. plagiatus*, *l. c.* p. 161, Maryland; and *X. granicollis*, *l. c.* p. 162, Pennsylvania.

Tomicus cacographus, Leconte, *l. c.* p. 162, Southern and Western States; *T. plastographus*, Leconte, *l. c.* p. 163, California.

Tomicus. Eichhoff (Berl. ent. Zeitschr. 1868) describes the following new species of this genus, all belonging to the subgenus *Cumatotomicus* (Ferr.):—*T. interstitialis* (Chap. MS.), p. 273, Jamaica; *T. integer* (Chap. MS.), ibid., Mexico; *T. cribricollis* (Reiche, MS.), ibid., Mexico; *T. oregonis* (Chap. MS.), p. 274, Oregon; and *T. perturbatus*, ibid., North America.

Pityophthorus cribripennis, Eichhoff, *l. c.* p. 274, *P. bisulcatus*, Eichh. ibid., and *P. pulchellus*, Eichh. *l. c.* p. 275, North America; *P. similis*, Eichh. ibid., Venezuela.

Amphicranus elegans (Chap. MS.), Eichhoff, *l. c.* p. 276, Mexico; *A. politus*, (Chap. MS.), Eichh. ibid., New Freiburg; *A. retusus* (Chap. MS.), Eichh. ibid., Cayenne.

Corthylus. Eichhoff describes the following as new species of this genus:—*C. abbreviatus*, *l. c.* p. 279, *C. macrocerus*, ibid., and *C. plagiatus*, ibid., Columbia; *C. transversus*, ibid., New Granada; and *C. papulans*, *l. c.* p. 280, Brazil.

Scolytus californicus, Leconte, *l. c.* p. 166, California; *S. sulcatus*, Leconte, *l. c.* p. 167, New York; and *S. ventralis*, Leconte, ibid., Washington.

Amphycranus (?) *perebææ* (Nördl. MS.), Ferrari, Berl. ent. Zeitschr. 1868, p. 253, Columbia.

Trictenotomidæ.

Lacordaire (Gen. Col. viii. p. 2) discusses the systematic position of these insects, which he regards as presenting no character, except their heteromerous tarsi, to separate them from the Prionides among the Longicornia. He divides them into the 2 genera *Autocrates* (J. Thoms.) and *Trictenotoma* (Gray).

Longicornia.

The eighth volume of Lacordaire's admirable 'Genera des Coléoptères' contains the first portion of his classification of the Longicornia. His system presents none of that originality which rendered the volumes on Curculionidæ so remarkable, the general principles of the classification of the Longicorn Beetles being already well established. It will be useful, however, to indicate the subordinate classification here, with references to the pages, as the number of groups is large. The table of subfamilies given by Lacordaire (p. 16) is as follows:—

I. Last joint of palpi not aciculate; anterior tibiæ with no oblique internal furrow.
  A. Ligula corneous; pronotum distinct from the sides of the prothorax; anterior coxæ strongly transverse ..... *Prionides.*
  B. Ligula generally membranous; pronotum very rarely distinct from the sides of the prothorax; anterior coxæ very variable. *Cérambycides.*

II. Last joint of palpi aciculate; anterior tibiæ with an internal oblique furrow ..... *Lamiides.*

The *Prionides* are divided into two Legions:—

Legion I. PRIONIDES ABERRANTS (p. 19).

Tribes: *Parandrides* (p. 21), *Erichsoniides* (p. 23), *Anoplodermides* (p. 25), *Hypocéphalides* (p. 28), *Cantharocnémides* (p. 31), and *Scéléocanthides* (p. 34).

Legion II. PRIONIDES VRAIS (p. 35).

Cohorte 1. Prionides vrais souterrains. Groups: *Psalidocoptides* (p. 38), *Psalidognathides* (p. 39), *Micropsalides* (p. 42), *Polyarthrides* (p. 44), *Méroscélisides* (p. 46), and *Cyrtognathides* (p. 50).

Cohorte 2. Prionides vrais sylvains. Groups: *Prionommides* (p. 57), *Prionides vrais* (p. 59), *Catypnides* (p. 62), *Cacoscélides* (p. 63), *Hoplidérides* (p. 66), *Acanthophorides* (p. 68), *Dérobrachides* (p. 71), *Enoplocérides* (p. 74), *Orthomégides* (p. 76), *Macrodontides* (p. 78), *Titanides* (p. 80), *Ancistrotides* (p. 81), *Aulacocérides* (p. 84), *Cténoscélides* (p. 86), *Callipogonides* (p. 91), *Ergatides* (p. 93), *Macrotomides* (p. 96), *Aulacopides* (p. 101), *Remphanides* (p. 103), *Mallodontides* (p. 122), *Zaracides* (p. 131), *Colpodérides* (p. 133), *Orthosomides* (p. 140), *Clostérides* (p. 149), *Ægosomides* (p. 153), *Monodesmides* (p. 157), *Tragosomides* (p. 163).

Cohorte 3. PRIONIDES VRAIS PŒCILOSOMES. Groups: *Anacolides* (p. 171), *Pyrodides* (p. 174), *Solénoptérides* (p. 180), and *Pœcilosomides* (p. 185).

The *Cérambycides* (p. 192) are in like manner divided into two Legions:—

Legion I. CÉRAMBYCIDES ABERRANTS (p. 194).

Tribes: *Thaumasides* (p. 194), *Dynamostides* (p. 196), and *Spondylides* (p. 197).

Legion II. CERAMBYCIDES VRAIS (p. 200).

Cohorte 1. CÉRAMBYCIDES VRAIS SYLVAINS. Groups: *Asémides* (p. 205), *Saphanides* (p. 211), *Œmides* (p. 216), *Achrysonides* (p. 231), *Torneutides* (p. 237), *Métopocœlides* (p. 244), *Cérambycides vrais* (p. 246), *Hespérophanides* (p. 273), *Eburiides* (p. 290), *Phoracanthides* (p. 298), *Sphérionides* (p. 312), *Piézocérides* (p. 324), *Ibidionides* (p. 328), *Eligmodermides* (p. 337), *Callidiopsides* (p. 340), *Graciliides* (p. 357), *Obrionides* (p. 360), *Néosténides* (p. 363), *Aphanasiides* (p. 367), *Phlycténodides* (p. 370), *Tessarommides* (p. 378), *Strongylurides* (p. 379), *Uracanthides* (p. 388), *Psilomorphides* (p. 392), *Holoptérides* (p. 393), *Rhagiomorphides* (p. 406), *Tropocalymmides* (p. 408), *Ptérosténides* (p. 410), *Macronides* (p. 414), *Mythodides* (p. 418), *Amétrocéphalides* (p. 420), *Aphnéopides* (p. 421), *Lepturides* (p. 424) (divided into *Sténocorides*, *Toxotides*, and *Lepturides vrais*), *Dorcasomides* (p. 456), *Dejanirides* (p. 460), *Oxypeltides* (p. 461), *Bimiides* (p. 464), *Necydalides* (p. 469), *Psébiides* (p. 479), *Molorchides* (p. 482), *Necydalopsides* (p. 493), *Phalotides* (p. 495), *Rhinotragides* (p. 497), *Hesthésides* (p. 512), *Distichocérides* (p. 513), *Eroschémides* (p. 515), *Pyresthides* (p. 518), *Prothémides* (p. 524), *Pythéides* (p. 527), *Déilides* (p. 534), *Typhocésides* (p. 539).

MASTERS has published a 'List of Australian Longicorns,' founded upon Pascoe's paper in the 'Journal of the Linnean Society.'

Lamiides.

PASCOE figures *Tmesisternus herbaceus* (Pasc.), Trans. Ent. Soc. Lond. 3rd ser. iii. pl. 19. fig. 4; *Elais* (*Tmesist.*) *exarata* (Pasc.) = *E. thoracica* (Thoms.), *l. c.* pl. 19. fig. 7; and *Pascoea idæ* (White), *l. c.* pl. 19. fig. 6.

PASCOE (*l. c.* p. 485, note) characterizes the genus *Henicodes* (*Enicodes*) (G. R. Gray). To *Polyxo* (Thoms.) Pascoe (*l. c.* pp. 489–493) refers *Tmesist. adspersus* (Blanch.), *T. sulcatipennis* (Blanch.), *T. biarciferus* (Blanch.), and *T. septempunctatus* (Blanch.); and to *Arrhenotus* (Pasc.), *T. rufipes* (Blanch.).

Oberea bipunctata (Panz.) is a distinct species, of which Kraatz indicates the chief differential characters (Berl. ent. Zeitschr. 1868, p. 301).

MARSEUL publishes (L'Abeille, v. p. 217) the detailed description of his *Dorcadion amori*, of which only the diagnosis appeared in the Rev. Zool. 1856.

MARMOTTAN, AUBÉ, and GIRAUD remark upon the occurrence of *Callidium castaneum* in logs and worked wood of various kinds. Reiche states that *C. deltili* (Chevr.) = *C. castaneum*. Bull. Soc. Ent. Fr. 1868, p. 49.

Cerosterna gladiator. This insect is said by Cleghorn to have been very injurious to young plantations of *Casuarina* along the Madras railway. Proc. Ent. Soc. Lond. 1868, p. 18.

Phytœcia molybdæna (Schönh.). The larva lives in the root of *Cerinthe major*, according to Frauenfeld, Verh. zool.-bot. Ges. in Wien, xviii. p. 161.

Sphingnotus (Perroud). Pascoe (Trans. Ent. Soc. Lond. 3rd ser. iii. pp. 482–483) characterizes this genus and indicates the species composing it. He admits *S. insignis* (Perr.) = *Ichth. mirabile* (Montr. nec Boisd.), *S. mniszechii* (Perr.), and *S. mirabilis* = *Tmesist. mirabilis* (Boisd.), the last described at length. Pascoe also describes a new species of this genus.

New genera :—

Diastamerus, g. n., Redtenbacher, Reise der Novara, Zool. ii. Col. p. 176. Allied to *Steirastoma*, but the face small, not dilated at the cheeks, the mandibles small, and the antennæ with long fringes. Sp. *D. tomentosus*, sp. n., Redt. *l. c.* p. 177, pl. 5. fig. 1, New Zealand.

Tympanopalpus, g. n., Redtenbacher, *l. c.* p. 180. Palpi with a large truncated terminal joint. Sp. *T. dorsalis*, sp. n., Redt. *l. c.* p. 180, pl. 5. fig. 3, New Zealand.

Marmaroglypha, g. n., Redtenbacher, *l. c.* p. 182. Allied to *Lamia*; forehead triangular; antennæ approximate, not fringed, joints 1–4 considerably thicker than the rest. Sp. *M. nicobarica*, sp. n., Redt. *l. c.* p. 183, pl. 5. fig. 5, Sambelong.

Eupromus, g. n., Pascoe, Proc. Ent. Soc. Lond. p. 12. Allied to *Oplophora*; antennary tubercles stout, erect, approximate; scape short, obconic, very cicatricose at apex; prosternum elevated; legs equal. Sp. *O. sieboldii* (Guér.) = *Monoh. championi* (White).

Bixadus, g. n., Pascoe, *l. c.* p. 12. Allied to *Monohammus*; joint 3 of antennæ not longer than 4; eyes large; legs equal, femora thickened; pro- and mesosterna declivous. Sp. *M. sierricola* (White).

Anthores, g. n., Pascoe, *l. c.* p. 13. Allied to *Monohammus*; joint 3 of antennæ longer than the following ones; eyes moderate; elytra crested at base; legs equal, femora thickened; pro- and mesosterna declivous. Sp. *M. leuconotus* (White).

Opepharus, g. n., Pascoe, *l. c.* p. 13. Allied to *Monohammus*; antennæ very long, joints 3 and 4 equal, last joint subulate; elytra crested at base; legs robust, intermediate smaller, femora thickened in the middle; pro- and mesosterna declivous. Sp. *O. signator*, sp. n., Pasc. ibid., Madagascar.

New species :—

Sphingnotus dunningi, Pascoe, Trans. Ent. Soc. Lond. 3rd ser. iii. p. 484, pl. 18. fig. 4, Batchian.

Polyxo superans, Pascoe, *l. c.* p. 488, Waigiou; *P. victoria*, Pasc. *l. c.* p. 489, pl. 19. fig. 8, Ceram.

Tmesisternus. Pascoe (*l. c.*) describes the following new Malasian species of this genus :—*T. analis*, p. 465, *T. pulvereus*, p. 466, Dorey; *T. agnatus*, p. 465, Gagie; *T. petechialis*, p. 466, Kaioa; *T. torridus*, p. 467, Gilolo, Batchian; *T. opalescens*, p. 467, pl. 19. fig. 3, Moluccas; *T. lepidus*, p. 469, *T. amœnus*, p. 470, Ceram; *T. plumbeus*, p. 470, Makian; *T. intricatus*, p. 471, Mysol, Dorey; *T. agrarius*, p. 472, *T. villaris*, p. 474, Dorey, Saylee; *T. obsoletus*, p. 474, *T. transversus*, p. 476, pl. 19. fig. 5, *T. pleuristictus*, p. 478, Aru; *T. dissimilis*, p. 476, Saylee; *T. avarus*, p. 477, Key; *T. contraversus*, p. 478, Dorey, Aru, Amboyna; *T. speciosus*, p. 479, pl. 19. fig. 1, *T. immitis*, p. 482, Mysol; *T. strigosus*, p. 480, Morty; and *T. agriloides*, p. 481, New Guinea.

Liopus xanthoxyli, Shimer, Proc. Amer. Ent. Soc. 1868, p. 7, Illinois.

Thysia viduata, Pascoe, Proc. Ent. Soc. Lond. 1868, p. 13, Sumatra.

Xylorhiza (?) *hieroglyphica*, Redtenbacher, Reise der Novara, Zool. ii. Col. p. 178, pl. 5. fig. 2, Java.

Monochamus doleschali, Redtenbacher, *l. c.* p. 181, pl. 5. fig. 4, Amboyna.

Callia xanthomera, Redtenbacher, *l. c.* p. 185, and *C. auricollis*, Redt. *l. c.* p. 186, pl. 5. fig. 6, Rio de Janeiro.

Amphionycha striyata, Redtenbacher, *l. c.* p. 186, and *A. colligata*, Redt. *l. c.* p. 187, pl. 5. fig. 7, Rio de Janeiro.

Lepturides.

Leptura marginata (Fab.) is not, as supposed by Mulsant, a variety of *L. strigilata* (Fab.). Kraatz (Berl. ent. Zeitschr. 1868, pp. 302, 303) discusses the characters of the two species. He also gives the characters of Thomson's *Pachyta septentrionis*, (*l. c.* p. 304). *Leptura femorata* (Fab.) belongs to *Grammoptera* (Kraatz, *l. c.* p. 304).

Blosyropus, g. n., Redtenbacher, Reise der Novara, Zool. ii. Col. p. 191 (Stenocoride). Very narrow, head, prothorax, and apex of elytra armed with sharp spines. Sp. *B. spinosus*, sp. n., Redt. *l. c.* p. 192, pl. 5. fig. 10, New Zealand.

Typocerus cervinus, sp. n., Walker, in 'Lord's Nat. in Vancouver's Island,' p. 332, Vancouver's Island.

Toxotus perductor, sp. n., Walker, *l. c.* p. 333, Vancouver's Island.

Phlyctænodes tritubereulatus, sp. n., Redtenbacher, *l. c.* p. 188, New Zealand.

Euryptera melanura and *E. dimidiata*, spp. nn., Redt. *l. c.* p. 189, Rio de Janeiro.

Ophistomis succincta, sp. n., Redtenbacher, *l. c.* p. 190, pl. 5. fig. 8, *O. auriflua*, sp. n., Redt. ibid., pl. 5. fig. 9, *O. lyrata*, and *O. discophora*, spp. nn., Redt. *l. c.* p. 191, Rio de Janeiro.

Cerambycides.

Callidium. Kraatz maintains (Berl. ent. Zeitschr. 1868, p. 337) the specific distinctness of *Callidium angustum* (Kriechb.), and suggests (*l. c.* p. 338) that *C. anale* (Redt.) and *C. similare* (Küst.) are varieties of *C. variabile.*

Criomorphus fuscus (Fab.). Kraatz maintains the distinctness of this species (Berl. ent. Zeitschr. 1868, pp. 331–333).

Smith records the evolution of specimens of *Clytus arietis* for three successive years from an oak-stump in a case in the British Museum. Janson suggests that the insects had remained in the larva state for the three years (Proc. Ent. Soc. Lond. 1868, p. xiv).

Dunning (Trans. Ent. Soc. Lond. 1868, pp. 105–132) communicates a series of reports on the ravages committed by *Xylotrechus quadripes* (Chevr.) in the coffee-plantations of Southern India. Dunning also gives figures of this insect and its ovipositor (*l. c.* p. 126), and discusses the generic synonymy of the Clytine division of the Cerambycides (*l. c.* pp. 127–132).

See also further notes on this species by Bidie, Proc. Ent. Soc. Lond. 1868, pp. xxviii–xxxii.

Further observations by Taylor and others on the ravages of *Xylotrechus quadripes* are published in Proc. Ent. Soc. Lond. 1868, pp. xix–xxii.

Saperda bivittata (Say), *Clytus robiniæ* (Forst.), *Clytus pictus* (Drury), and *Cerasphorus cinctus* (Drury). On the habits of these species, see Walsh, Pract. Entom. i. pp. 26–28, 29 & 30; see also *l. c.* p. 47.

De Malleray has observed the development of a species of *Plocæderus* in Cochin China. It forms a very solid white cocoon, of calcareous aspect, like the egg of a bird. Bull. Soc. Ent. Fr. 1868, p. lii.

New genera :—

Lacordaire (Gen. des Coléoptères, viii.) characterizes the following new genera of Cerambycides (incl. Lepturides) :—

Ochrus, *l. c.* p. 225. Allied to *Œme*. *O. grammoderus*, sp. n., Lacordaire, *l. c.* p. 225, note, Cayenne.

Hyphus, *l. c.* p. 226. Allied to preceding. *H. aurantiacus*, sp. n., Lacordaire, *l. c.* p. 226, note, Celebes.

Spathopygus, *l. c.* p. 239. Allied to *Torneutes*. Sp. *Criodion eburioides* (Blanch.) and *Torneutes obscurus* (Guér.).

Taurotagus, *l. c.* p. 249. Allied to *Cœlodon*. *T. klugii*, sp. n., Lacordaire, *l. c.* p. 249, note, Natal.

Pantomallus, *l. c.* p. 286. Allied to *Chion*. *P. villosicornis*, sp. n., Lacordaire, *l. c.* p. 287, note, Brazil.

Opades, *l. c.* p. 288. Allied to *Chlorida*. Sp. *Chlorida costipennis* (Buq.).

Stylicips, *l. c.* p. 291. Allied to *Eburia*. *S. sericans*, sp. n., Lacordaire, *l. c.* p. 292, note, Cayenne.

Oncoptera, *l. c.* p. 297. Allied to *Eburia*. *O. vidua*, sp. n., Lacordaire, *l. c.* p. 298, note, Montevideo.

Hypermallus, *l. c.* p. 302 = *Elaphidion* auct. recentior. Type *Cer. pulverulentus* (De G.).

Nephalius, *l. c.* p. 319. Allied to *Peribœum*. Sp. *Sphærion suturale* (Pasc.), *S. rugicolle* (Guér.), and probably *S. triste* (Guér.).

Sydax, *l. c.* p. 335. Allied to *Phormerium*. *S. stramineus*, sp. n., Lacordaire, *l. c.* p. 336, note, Brazil.

Trichomallus, *l. c.* p. 338. Allied to *Eligmoderma*. *T. maculipennis*, sp. n., Lacordaire, ibid., note, South America.

Myrsus, *l. c.* p. 368. Allied to *Aristogitus*. *M. unicolor*, sp. n., Lacordaire, ibid., note, Australia (?).

Semnus, *l. c.* p. 376. Allied to *Ancylodonta*. Sp. *S. phlyctænioides*, sp. n., Lacordaire, ibid., note, Brazil.

Heterolepis, *l. c.* p. 381. Allied to *Aprosictus*. *H. tmesisternoides*, sp. n., Lacordaire, ibid., note, New Caledonia.

Aphiorhynchus, *l. c.* p. 411. Sp. *Psilomorpha lusoria* (Pasc.) and probably *P. apicalis* (Pasc.).

Pterostenus (M'L. MS.), *l. c.* p. 412. Type *Stenocorus suturalis* (Oliv.). Sp. *Leptura ceramboides* (Kirby), *Stenod. dorsalis* (Boisd.), *S. maculicornis* (Saund.), and *S. labiatus* (Pasc.).

Megacœlus, *l. c.* p. 458 = *Megaproctus* (Chevr.).

Sphecogaster, *l. c.* p. 471. Allied to *Callisphyris*. *S. biplagiatus*, sp. n., Lacordaire, *l. c.* p. 472, note, Surinam.

Atelopteryx, *l. c.* p. 473. Allied to *Hephæstion*. *A. compsoceróides*, sp. n., Lacordaire, *l. c.* p. 474, note, Brazil.

Oxycoleus, *l. c.* p. 484. Allied to *Stenopterus*. *O. clavipes*, sp. n., Lacordaire, *l. c.* p. 485, note, Mexico.

Schizopleurus, *l. c.* p. 535. Allied to *Telocera*. *S. balteatus*, sp. n., Lacordaire, ibid., note, North Australia.

New species :—

Callichroma ruficolle, Redtenbacher, Reise der Novara, Zool. ii. Col. p. 194, Hong Kong.

Chrysoprasis concolor, Redtenbacher, *l. c.* p. 194, *C. chalybea*, Redt. *l. c.* p. 195, and *C. auriventris*, Redt. ibid., Rio de Janeiro.

Eutrypanus princeps, Walker, Lord's Naturalist in Vancouver's Island &c. ii. p. 331, Vancouver's Island.

Gnatholea submuda, Lacordaire, *l. c.* p. 284, note, Malasia.

Niphasia pascoei, Lacordaire, *l. c.* p. 309, Siam.

Phlyctænodes retiferus, Lacordaire, *l. c.* p. 374, note, New Zealand; *P. binodosus*, Lacordaire, ibid., Australia.

Clytus gratiosus, Marseul, L'Abeille, v. p. 203, Beyrouth.

Clytus lineolatus, Redtenbacher, *l. c.* p. 196, Java.

Ibidion biplagiatum, Redtenbacher, *l. c.* p. 198, pl. 5. fig. 11, and *I. biguttatum*, Redt. ibid., pl. 5. fig. 12, Brazil.

Ctenodes thoracicus, Redtenbacher, *l. c.* p. 201, Brazil.

Prionides.

Macrotoma heros (Heer). Dohrn publishes a full description of this species (*vide infrà*) and of a larva probably belonging to it, illustrated with figures. Stett. ent. Zeit. 1868, pp. 201–215, pl. 2.

New genera and species :—

Lacordaire characterizes the following new genera in his 'Genera des Coléoptères,' tome viii. :—

Rhodocharis, *l. c.* p. 49. Allied to *Prionapterus*. *R. anacoloides*, sp. n., Lacordaire, *l. c.* p. 50, note, Brazil.

Physopleurus, *l. c.* p. 120. Allied to *Basitoxus*. *P. dohrnii*, sp. n., Lacordaire, *l. c.* p. 121, note, Venezuela.

Nothopleurus, *l. c.* p. 125. Allied to *Mallodon*. *N. ebeninus*, sp. n., Lacordaire, *l. c.* p. 125, note, Yucatan.

Neoprion, *l. c.* p. 131. Allied to *Zarax*. *N. parandræformis*, sp. n., Lacordaire, *l. c.* p. 132, note, Malacca.

Eudianodes, g. n., Pascoe, Proc. Ent. Soc. Lond. 1868, p. xiii. Allied to *Colpoderus*; clypeus distinct; prothorax with the margins narrowed, serrated; mesosternum broad; tibiæ simple, compressed; tarsi short, last joint nearly equal to the rest. Sp. *E. swanzii*, sp. n., Pasc. *l. c.* p. xiv, Cape-Coast Castle.

Hystatus thomsonii, Lacordaire, *l. c.* p. 135, note, Eastern Archipelago (= *H. javanus*, Thoms. *nec* Dej.).

Polyarthron desvauxii, Fairmaire, Ann. Soc. Ent. Fr. 4° sér. viii. p. 499, Boussada.

Ægosoma javanicum, Redtenbacher, *l. c.* p. 202, Java.

Macrotoma crassum, *M. rude*, and *M. lœve* (sic), Fairmaire, *l. c.* p. 820, Madagascar.

Phytophaga.

Criocerides.

Suffrian (Stett. ent. Zeit. 1868, pp. 21–24) remarks that *Hæmonia americana* (Dej., Guér.) = *H. nigricornis* (Kirby), and indicates the distinctive characters of that species and *H. melsheimeri* (Lac.).

Bellevoye has found in the Moselle, among the roots of *Myriophyllum*, the larvæ and pupæ of a species of *Hæmonia*. The pupæ are enclosed in a transparent case, quite dry within, and buried in a semifluid mud. Bull. Soc. Ent. Fr. 1868, p. lxx.

Reiche notices the species of *Hæmonia* detected by Bellevoye, and described by him under the name of *H. mosellæ*, and states that the species has also been taken near Strasbourg. It has joints 1 and 2 of the tarsi subequal, a character said by Lacordaire to be peculiar to the species living on marine plants. Laboulbène states that the larvæ resemble those of *Donacia*, and consequently by no means agree with Lacordaire's description (Bull. Soc. Ent. Fr. 1868, pp. civ–cv).

Lema trilineata. On this species see Walsh, Pract. Entom. ii. p. 25.

Crioceris semirufa, sp. n., Marseul, L'Abeille, v. p. 204, Beyrouth.

Donacia pubescens, sp. n., Leconte, Trans. Amer. Ent. Soc. ii. p. 55, Smoky-Hill River.

Hæmonia mosellæ, sp. n., Bellevoye, Bull. Soc. Ent. Fr. 1868, p. lxxxvi, in the Moselle, near Metz (*vide suprà*).

Chrysomelides.

Suffrian (Stett. ent. Zeit. 1868, pp. 170–176) remarks upon the synonymy of various species of *Cryptocephalus*:—*C. betulæ nanæ* (Schill.) = *C. 10-punctatus* (Linn.); *C. 4-signatus* (Dej., Suff.) is a North-American species, and perhaps a variety of *C. sellatus* (Suff.) = *notatus* (Kirb. nec Fab.). Specimens of two distinct species are sent from France under the name of *C. ochroleucus* (Fairm.). Suffrian indicates their differences and describes one of them as new. He also describes a new species from Sicily, and proposes the name of *C. luridicollis* (*l. c.* p. 174) for *C. maculicollis* (Muls. & Rey), as there is already a *C. maculicollis* (Walk.). On pp. 175, 176, Suffrian tabulates the above-mentioned and some allied species, namely, *C. minutus, pusillus, populi, macellus*, and *politus*.

Oreina. Bellier de la Chavignerie publishes (Bull. Soc. Ent. Fr. 1868, pp. ci–cii) a note on the Pyrenean species of *Oreina*. He enumerates *O. nigrina* and *luctuosa* (Suff.) and *O. nigriceps* (Fairm.).

The observation of Tappes on the eggs and larvæ of *Cryptocephalus* are translated by Rye, Ent. M. Mag. iv. pp. 189, 190.

Doryphora 10-lineata. This species, which has of late years attacked the potatoes in the United States, where it is known as the "New Potato Bug," is noticed in numerous articles in the Practical Entomologist (vol. i. pp. 1–4, 84, 85, 88, 89, and vol. ii. pp. 13–16, 101, 102, and 116).

Colaspis flavida (Say). For its habits see Walsh, Pract. Entom. ii. pp. 68, 69.

Phratora cavifrons (Thoms.). Sharp records its occurrence in Britain. Ent. M. Mag. v. p. 100.

New species:—

Clythra pelissieri, Buquet, Bull. Soc. Ent. Fr. 1868, p. cv, Algeria.

Clythra bisignata, Walker, Lord's Naturalist in Vancouver's Island &c. ii. p. 333, Vancouver's Island.

Clythra (*Gynandrophthalma*) *hellenica*, Marseul, L'Abeille, v. p. 205, Greece, Beyrouth.

Coscinoptera axillaris, Leconte, Trans. Amer. Ent. Soc. ii. p. 56, Arkansas and Smoky-Hill Rivers; *C. subfasciata*, Leconte, ibid., Arizona.

Griburius speciosus, Leconte, *l. c.* p. 56, Raton Mountain.

Chrysomela anceyi, Marseul, *l. c.* p. 211, and *C. libanicola*, Mars. *l. c.* p. 212, Lebanon.

Chrysomela continua, Leconte, Trans. Amer. Ent. Soc. ii. p. 57, Raton Mountain and Arizona.

Cryptocephalus fallax, Suffrian, Stett. ent. Zeit. 1868, p. 174, France and Germany; *C. plantaris*, Suffr. ibid., Sicily; also *C. luridicollis* = *maculicollis* (Muls. & Rey, nec Walk.), *l. c.* p. 175.

Cryptocephalus tappesi, Marseul, *l. c.* p. 206, Syria (Mount Kulegh); *C. pullus*, Mars. *l. c.* p. 208, Beyrouth; *C. dahdah*, Mars. *l. c.* p. 209, Beyrouth.

Pachybrachys haliciensis, L. Miller, Verh. zool.-bot. Ges. in Wien, xviii. p. 29, East Galicia.

Gallerucides.

Suffrian (Arch. Naturg. 1868, pp. 163–252) indicates the species of Halticides collected by Gundlach in Cuba, of which he enumerates 40. The known species upon the characters, synonymy, &c. of which he remarks are:— *Œdionychis cyanipennis* (Fab.), *Œ. fasciata* (Fab.), *Haltica collata* (Fab.), *H. chlorotica* (Oliv.), *H. religata* (Klug), *H. costipennis* (J.-Duv.), *H. plebeja* (Oliv.), *H. pubescens* (Ent. H.), *H. hirtipennis* (Melsh.) = *parvula* (Fab.), *H. basalis* (J.-Duv.), *Odontota axillaris* (Dej.), *Porphyraspis xanthocera* (Erichs.), *P. gundlachii* (Boh.), *Chelymorpha flavicollis* (Klug), *Chelymorpha argus* (Herbst), *Batonota lerouxii* (J.-Duv.), *Eurypepla vitrea* (J.-Duv.), *Psalidonota dorsopunctata* (Klug), *Coptocycla bisbinotata* (Boh.), *C. 4-signata* (Boh.), *C. conflagrata* (Boh.), and *C. guttata* (Oliv.).

Waterhouse publishes (Ent. M. Mag. v. pp. 163–167) an important table of the British Halticidæ, with names and remarks by Kutschera. It is the result of the communication to the latter by Waterhouse of a series of the British species, and contains in three columns, first the specific names adopted by Waterhouse in his Catalogue of British Coleoptera, secondly the generic and specific names given to them by Kutschera, and, thirdly, some remarks upon synonymy &c.

Haltica curvifrons (Bach) = *erichsoni* (Zett.), according to Kraatz (Berl. ent. Zeitschr. 1868, p. 304).

Longitarsus elongatus (Bach) is an immature form of *L. niger* (Ent. H.), according to Kraatz (ibid.).

Shimer (Amer. Natural. ii. pp. 514–517) gives an account of the natural history of *Haltica striolata* (Fab.), which he figures with its larva and pupa (ibid. figs. 1, 2, 2 *a*).

Graptodera chalybea. On the habits of this species see Kirkpatrick, Pract. Entom. i. p. 40; see also vol. ii. p. 50.

New species :—

Fidia viticida, Walsh, Pract. Entom. ii. p. 87, Southern United States, injurious to vines.

Luperus luteicollis, Leconte, Trans. Amer. Ent. Soc. ii. p. 57, Raton Mountain and New Mexico; *L. varicornis*, Leconte, ibid., Arizona.

Phyllechthrus nigripennis, Leconte, *l. c.* p. 58, Kansas.

Adimonia hamaticollis, Fairmaire, Ann. Soc. Ent. Fr. 4e sér. viii. p. 500, Morocco.

Aplosonyx ancora, Redtenbacher, Reise der Novara, Zool. ii. Col. p. 206, Java; *A. heterocera*, Redt. *l. c.* p. 206, Hong Kong.

Diabrotica blandula, Leconte, *l. c.* p. 58, Smoky-Hill River; *D. lemniscata*, Leconte, ibid., Raton Mountain and New Mexico; *D. virgifera*, Leconte, *l. c.* p. 59, Fort Wallace.

Thyamis agilis, Rye, Ent. M. Mag. v. p. 133, Surrey.

Podagrica unicolor, Marseul, L'Abeille, v. p. 213, Beyrouth.

Œdionychis. Suffrian (Arch. Naturg. 1868) describes the following new species of this genus from Cuba:—*Œ. crucipennis*, p. 168, *Œ. complanata*, p. 169; *Œ. 10-punctata*, p. 170; *Œ. tortuosa*, p. 171; and *Œ. picta*, p. 173.

Hadropoda ferruginea*, Suffrian, *l. c.* p. 174, Cuba.

Haltica. Of this genus † Suffrian describes the following new species from Cuba:—*H. fimbriolata*, *l. c.* p. 177; *H. marginipennis*, *l. c.* p. 179; *H. ambulans*, *l. c.* p. 182; *H. minima* (Chevr.), *l. c.* p. 184; *H. adspersula*, *l. c.* p. 185; *H. interstitialis*, *l. c.* p. 187; *H. clathrata*, *l. c.* p. 189; *H. pyritosa* (Mus. Berol.), ibid.; *H. robusta*, *l. c.* p. 191; *H. occidentalis* (Mus. Berol.), *l. c.* p. 197; *H. subaurea*, *l. c.* p. 199; *H. purpurascens* (Chevr.), ibid.; *H. gravidula* (Mus. Berol.), *l. c.* p. 201; *H. asphaltina* (Mus. Berol.), ibid.; *H. pauxilla*, *l. c.* p. 202; *H. dichroa*, *l. c.* p. 203; *H. stomachosa*, *l. c.* p. 204; *H. 14-punctata*, *l. c.* p. 206; *H. compressa*, *l. c.* p. 211; *H. auripennis*, *l. c.* p. 212; *H. cœruleipennis*, *l. c.* p. 213, and *H. fallax*, *l. c.* p. 214.

Haltica (*Crepidodera*) *transsylvanica* (Fuss, MS.), L. Miller, Verh. zool.-bot. Ges. in Wien, xviii. p. 31, East Galicia; *H.* (*Orestia*) *arcuata*, L. Miller, *l. c.* p. 32, East Galicia; *H.* (*O.*) *hampei*, L. Miller, *l. c.* p. 32, note, Croatia.

*Haltica** (*Orestia*) *electra*, Gredler, Col. Hefte, iii. p. 78, Tyrol.

Longitarsus varicornis, Suffrian, *l. c.* p. 215, *L. seminulum*, Suffr. *l. c.* p. 216, and *L. subæneus*, Suffr. ibid., Cuba.

Plectroscelis tuberculata, Suffrian, *l. c.* p. 218, and *P. apricaria* (Mus. Berol.), Suffr. *l. c.* p. 219, Cuba.

Dibolia rubro-pustulata, Suffrian, *l. c.* p. 221, and *D. adulta*, Suffr. *l. c.* p. 222, Cuba.

Argopus coccinelloides, Suffrian, *l. c.* p. 223, Cuba.

Odontota cyanoptera (Mus. Berol.), Suffrian, *l. c.* p. 227, and *O. rufiventris*, Suffr. *l. c.* p. 229, Cuba.

Uroplata pulchella (Chevr.), Suffrian, *l. c.* p. 230, and *U. tricolor*, Suffr. *l. c.* p. 232, Cuba.

Octotoma gundlachii, Suffrian, *l. c.* p. 234, Cuba.

Porphyraspis fallax, Suffrian, *l. c.* p. 237, Cuba.

Chelymorpha angusticollis, Suffrian, *l. c.* p. 239, *C. lurida*, Suffr. *l. c.* p. 240, and *C. fimbrialis*, Suffr. *l. c.* p. 241, Cuba.

Coptocycla oblita, Suffrian, *l. c.* p. 247, and *C. repudiata*, Suffr. *l. c.* p. 249, Cuba.

Cassidides.

Cassida margaritacea (Fab.). The larva feeds on the leaves of the Soapwort, according to Frauenfeld, Verh. zool.-bot. Ges. in Wien, xviii. p. 161.

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* An Ahrensian name for the "Halticæ Œdipodes" of Illiger, adopted here by Suffrian.

† Embracing the so-called genera *Graptodera*, *Crepidodera*, *Phyllotreta*, and *Aphthona*, also *Disonycha* and *Systena* (Chevr.).

Cassida kœchlini (Mars.) is described from the Algerian Sahara by Fairmaire, Ann. Soc. Ent. Fr. 4e sér. viii. p. 500.

Cassida pellegrini, sp. n., Marseul, L'Abeille, v. p. 213, and *C. cornea*, sp. n., Mars. *l. c.* p. 214, Beyrouth.

Erotylidæ.

L. Bedel publishes (L'Abeille, v. pp. 1–50) a monograph of the species of this family inhabiting Europe, Western Asia, and the north of Africa. He divides the group into 2 sections :— 1. *Engides*, having the first joint of the maxillary palpi shorter than the following 2 combined, and the fourth joint oval; and 2. *Triplacides*, having the first joint of the maxillary palpi longer than the second and third together, and the fourth joint transverse. The former include two genera, namely, *Engis* of authors and a new genus, *Combocerus*. The Triplacides form 3 genera, namely, *Triplax*, *Tritoma*, and *Aulacocheilus*. The author adds some notes on the structure of *Aulacocheilus* and on some points of synonymy (*l. c.* p. 136).

Combocerus, g. n., Bedel, L'Abeille, v. p. 12. Funiculus of antennæ stout, joints 1–8 moniliform, equal, club elongate, perfoliate; joint 4 of tarsi very small, partly enveloped by 3; elytra with 8 rows of points. Sp. *Mycet. sanguinicollis* (Fab.).

Engis pontica, Bedel, L'Abeille, v. p. 9, Batoum.

Triplax breviscutata, Fairmaire, Ann. Soc. Ent. Fr. 4e sér. viii. p. 502, Morocco.

Triplax marseuli, Bedel, *l. c.* p. 24, South of France and Algeria; *T. cyanescens*, Bedel, *l. c.* p. 26=*melanocephala* (Lac.), Algeria, Spain, Portugal.

Aulacocheilus algerinus (Reiche, MS.), Bedel, *l. c.* p. 47, Algeria.

Languria convexicollis, Horn, Trans. Amer. Ent. Soc. ii. p. 140, California.

Endomychidæ.

De Marseul has published (L'Abeille, v. pp. 51–138) a monograph of the species of this family inhabiting Europe and its confines, in which, as in his previous monographic papers, he commences with a general account of the structure and transformations of the insects composing the family and of what may be termed its literary history. He gives (*l. c.* pp. 66–68) a table of the genera, from which the following is slightly abridged :—

I. Tarsi with joint 3 very small, enclosed in the preceding (Endom. propres).

A. Prosternum not visible between the coxæ.

1. Antennæ elongate, joint 2 much shorter than 3, the rest long, club thin.

a. Shining; pronotum subparallel; last joint of antennæ elongate, acuminate ..... 1. Ancylopus (Costa).

b. Punctured and pubescent; pronotum subcordiform; last joint of antennæ obtuse ..... 5. Dapsa (Lat.).

2. Antennæ stout, joint 2 equal to 3, the rest moniliform, club short and stout.
   a. Smooth; pronotum subparallel; joint 9 of antennæ narrower than 10 ..... 4. LYCOPERDINA (Lat.).
   b. Pubescent; pronotum subcordiform; joint 9 of antennæ much dilated ..... 8. HYLAIA (Guér.).

B. Prosternum elevated between the coxæ, and distinctly separating them.

1. Elytra oval-oblong; abdomen of 5 segments; club of antennæ short, or composed of unequal joints.
   a. Club short, its last joint not longer than the preceding.
      * Narrow, pubescent; joint 2 of antennæ about equal to 3. 7. PERRISIA, g. n.
      † Broad, smooth; joint 2 of antennæ half the size of 3. 3. MYCETINA (Muls.).
   b. Club thin, last joint longer than the two preceding united. 6. POLYMUS (Muls.).
2. Elytra broad and rounded; abdomen of 6 segments; club of antennæ very long, its 3 joints equal ..... 2. ENDOMYCHUS (Panz.).

II. Tarsi with joint 3 free and visible (ENDOM. ANNEXÉS).

A. Shining, black, pronotum red; anterior coxæ contiguous; mesosternum very long; antennæ inserted beneath the frontal margin. 9. LEIESTES (Redt.).

B. Pubescent, ferruginous; prosternum visible between the coxæ; mesosternum short; antennæ inserted on the forehead.

1. Oval-oblong; mesosternum longer than broad.
   a. Prothoracic furrows very short; elytra with a sutural stria. 10. SYMBIOTES (Redt.).
   b. Prothoracic furrows complete; no sutural stria. 12. MYCETÆA (Steph.).
2. Rounded; mesosternum broader than long. 11. CLEMMUS (Hampe).

Ancylopus includes only 1 European species, *A. melanocephalus* (Costa) of *Endomychus* 3 species are described; *Lycoperdina* has 3 European species, *succincta*, Linn., *bovistæ* (Fab.), and a new one from Algeria; *L. pallida* (Gebl.) is believed by the author to be an immature example of *succincta*; *L. marginalis* (Gebl.) and *humeralis* (Woll.) are also described; of *Dapsa* the author describes *denticollis* (Germ.) and *trimaculata* (Motsch.) as European, also *edentata* (Woll.), *barbara* (Luc.), *limbata* (Motsch.), and *caucasica* (Motsch.), and 3 new Algerian species; *Polymus* includes only Mulsant's species *nigricornis*; *Hylaia* (substituted for *Ceramis*, Gerst.) has 2 species, *podagrica* (Guér.) and *rubricollis* (Dahl.), the former from Batoum; of *Leiestes* 2 species are described, of *Symbiotes* 2, of *Clemmus* 1, and of *Mycetæa* 1.

Perrisia, g. n., Marseul, L'Abeille, v. p. 113. (See Table.) Sp. *Lycop. brevis* (Perris).

Lycoperdina penicillata, sp. n., Marseul, L'Abeille, v. p. 96, Algeria.

Dapsa subpunctata, sp. n., Marseul, *l. c.* p. 107, *D. sellata*, sp. n., Mars. *l. c.* p. 108, and *D. pallescens*, sp. n., Mars. *l. c.* p. 109, Algeria.

Dapsa spinicollis, sp. n., Fairmaire, Ann. Soc. Ent. Fr. 4e sér. viii. p. 501, Morocco.

Coccinellidæ.

Coccinella bissexguttata. Frauenfeld (Verh. zool.-bot. Ges. in Wien, xviii. p. 886) describes the larva and pupa of this species, which he found on the ash.

Epilachna globosa (Schneid.). Frauenfeld notices the metamorphoses of this species (Verh. zool.-bot. Ges. in Wien, xviii. p. 161).

Coccinella marmottani, sp. n., Fairmaire, Ann. Soc. Ent. Fr. 4e sér. viii. p. 501, Biskra.

Scymnus pharoides, sp. n., Marseul, L'Abeille, v. p. 215, and *S.* (*Nephus*) *syriacus,* sp. n., Mars. *l. c.* p. 216, Beyrouth.

HYMENOPTERA.

A. *Separate Work.*

Ormerod, E. L. British Social Wasps: an introduction to their Anatomy and Physiology, Architecture, and general Natural History, with illustrations of the different species and their nests. London, 1868, sm. 8vo, pp. 270, with 14 plates.

In this work the author gives a good semipopular, although rather verbose, description of the structure, characters, and habits of the British Social Wasps.

B. *Papers published in Journals &c.*

Cresson, E. T. Catalogue of a Collection of Hymenoptera made by Prof. F. Sumichrast near Cordova, Mexico. Trans. Amer. Ent. Soc. vol. ii. pp. 1–38: May 1868.

Contains a list, with descriptions, of Ichneumonidæ.

——. A list of the Ichneumonidæ of North America, with descriptions of new species. Part I. Trans. Amer. Ent. Soc. vol. i. pp. 289–312 (October 1867); and Part II. Ibid. vol. ii. pp. 89–114 (July 1868).

——. Catalogue of a small collection of Hymenoptera made in New Mexico during the summer of 1867. Trans. Amer. Ent. Soc. vol. i. pp. 375–388: January 1868.

——. Descriptions of North-American Bees. No. 1. Proc. Bost. Soc. Nat. Hist. vol. xii. pp. 165–171: December 2, 1868.

Contains descriptions of species of *Colletes,* mostly new.

Desborough, J. G. Observations on the duration of life in the Honey-Bee. Trans. Ent. Soc. Lond. 1868, pp. 225–230.

Dietrich, K. Beiträge zur Kenntniss der im Kanton Zürich einheimischen Insekten. Zwei- bis vierundzwanzigste Centurie. Mittheil. schweiz. entom. Gesellsch. vol. ii. pp. 347–372: July 1868.

Contains a list of Hymenoptera (300 species) of all families found in the Canton of Zurich, with notices of their times and places of occurrence and descriptions of a few new species.

FÖRSTER, —. Monographie der Gattung *Campoplex*, Grav. Verhandl. zool.-bot. Gesellsch. in Wien, Band xviii. pp. 761–876, pl. 10.

GERSTÄCKER, A. *Psænythia*, eine neue Bienen-Gattung mit gezähnten Schienensporen. Archiv für Naturg. 1868, pp. 111–137.

HAGENS, — VON. Einzelne Bemerkungen über Ameisen. Berliner entom. Zeitschr. 1868, pp. 265–268.

HEYDEN, L. VON. Ueber das seither unbekannte Männchen von *Xyloterus fuscicornis*, F. Berliner entom. Zeitschr. 1868, pp. 227–230.

LUCAS, H. Etude pour servir à l'Histoire Naturelle de la *Xylocopa violacea*, Hyménoptère perce-bois de la tribu des Apides. Annales Soc. Ent. France, 4e série, tome viii. pp. 727–736, pl. 12. figs. 4–6.

MARSHALL, T. A. On some British Cynipidæ. (Continued.) Ent. Monthly Mag. vol. iv. pp. 171–174, 223–226, 271–275.

——. Notes on some Parasitic Hymenoptera, with descriptions of new species. Ent. Monthly Mag. vol. v. pp. 154–160: November and December 1868.

——. On some British *Diapriadæ*. Ent. Monthly Mag. vol. iv. pp. 201–203.

MAYR, GUSTAV. Formicidæ novæ Americanæ, collectæ a Prof. P. de Strobel. Annuario della Soc. dei Naturalisti in Modena, anno iii. pp. 161–178: 1868.

This paper contains descriptions of new species of Formicidæ collected in South America by Strobel, with a list of all the species obtained by him.

MORAWITZ, F. Ueber einige Faltenwespen und Bienen aus der Umgegend von Nizza. Horæ Soc. Ent. Ross. tome v. pp. 145–156.

Contains a list of Wasps and Bees observed by the author at Nice in May 1867. Several species are described as new.

NORTON, EDWARD. Notes on Mexican Ants. American Naturalist, vol. ii. pp. 57–72, plate 2: April 1868.

NORTON, E. (See SUMICHRAST, F.)

PACKARD, A. S. The Home of the Bees. (Concluded.) American Naturalist, vol. i. pp. 596–606.

Packard, A. S. (See "Insecta.")

Radoszkowsky, O. Matériaux pour servir à l'étude des Insectes de la Russie. IV. Notes sur quelques Hyménoptères de la tribu des Apides. Horæ Soc. Ent. Ross. tome v. pp. 73–90, plate 3.

Sichel, —. Considérations sur la fixation des limites entre l'espèce et la variété, fondées sur l'étude des espèces Européennes et Méditerranéennes du genre hyménoptère *Polistes* (Latreille). Comptes Rendus, tome lxvii. pp. 75–77.

Smith, Frederick. Descriptions of Aculeate Hymenoptera from Australia. Trans. Ent. Soc. Lond. 1868, pp. 231–258 : July.

——. Observations on the economy of Brazilian Insects, chiefly Hymenoptera, from the Notes of Mr. Peckolt. Ibid. pp. 133–135.

——. A Revision of the British species of Bees. Entomologist, vol. iv. pp. 1–9.

This is a continuation of Smith's papers noticed in the 'Record' for last year (p. 305). It contains the revision of the British species of *Cœlioxys*.

——. Notes on Hymenoptera. Entomologist's Annual, 1869, pp. 65–82.

Sumichrast, F. Notes on the habits of certain species of Mexican Hymenoptera presented to the American Entomological Society. No. 1. On the habits of the Mexican species of the genus *Eciton*, Latr. Trans. Amer. Ent. Soc. vol. ii. pp. 39–46 : May 1868.

Sumichrast's notes on the habits of these insects are followed by some remarks on the species by E. Norton, including the description of two new species.

Tischbein, —. Hymenopterologische Beiträge. Stettiner entom. Zeitung, 1868, pp. 248–258.

Descriptions of new species of Ichneumonidæ.

Tschek, C. Beiträge zur Kenntniss der œsterreichischen Pimplarien. Verhandl. zool.-bot. Gesellsch. in Wien, Band xviii. pp. 269–280, Taf. 2 B.

——. Beiträge zur Kenntniss der österreichischen Tryphoniden. Ibid. pp. 437–448.

Wesmael, C. Ichneumonologica Documenta. Bull. de l'Acad. Roy. de Belgique, série 2, tome xxiv. pp. 441–482, 537–543, with 1 plate : 1867.

Notes, chiefly on the synonymy of species of *Eupalamus*, *Chasmodes*, *Ichneumon*, *Amblyteles*, *Heresiarches*, and *Oronotus*.

Westwood, J. O. Descriptions of new genera and species of Exotic Hymenoptera. Trans. Ent. Soc. London, 1868, pp. 327–332 : December 1868.

C. *Anatomical and Physiological Papers.*

Bessels, Emil. Die Landois'sche Theorie widerlegt durch das Experiment. Zeitschr. für wiss. Zoologie, Band xviii. pp. 124 141.

In this memoir the author refutes, from actual experiments, the assertions of Landois with regard to the development of the sexes in Insects, and especially in the Bee (see 'Record,' 1867, p. 306). Bessels confirms Siebold's theory.

Lucas, H. Quelques mots sur un cas de cyclopie observé chez un Insecte Hyménoptère de la tribu des Apiens (*Apis mellifica*). Annales Soc. Ent. France, 4e série, tome viii. pp. 737–740, pl. 12. figs. 1–3.

In this paper Lucas describes a ♀ of *Apis mellifica*, in which the two eyes are confluent on the vertex and the ocelli wanting. The insect is imperfectly developed in other respects.

Plateau, Félix. On the production of the Sexes in Bees. Ann. & Mag. Nat. Hist. 4th series, vol. ii. pp. 252–255.

The author supports the view of Landois, in opposition to that maintained by Dzierzon, Von Siebold, and others, and cites the occurrence of androgynous Bees in evidence that the larvæ must be asexual up to a certain time. He refers to the analogy of the *Aphides*, assuming Balbiani's observations on the hermaphrodite nature of the viviparous forms to be correct, and suggests that, by some kind of food, the dormant male organs, which are supposed to exist in the larvæ, are forced into development. He discusses the observations of Sanson and Bastian, and endeavours to explain them in accordance with the above principles.

Sanson, A. Sur les conditions déterminantes des sexes chez les Abeilles. Comptes Rendus, tome lxvi. pp. 754–756.

Notes on a case of production of Drones in worker-cells, cited in opposition to the views of Landois.

General Observations.

Cresson has commenced a list of a collection of Mexican Hymenoptera collected by F. Sumichrast and presented by him to the American Entomological Society. The portion published relates exclusively to Ichneumonidæ, of which many new species are described. (Trans. Amer. Ent. Soc. ii. pp. 1–38). *Ichn. breviventris* (Cress.) = *Joppa conica* (Brullé).

Frauenfeld (Verh. zool.-bot. Ges. in Wien, xviii. p. 290) gives a list of the species of this order collected by him upon the Nicobars, with the omission of the Ichneumonidæ. The number of species recorded is 21, 10 of which are Formicidæ. About half the species were new.

Walker publishes lists of the *Formicidæ*, *Mutillidæ*, *Sphegidæ*, *Apidæ*, and *Tenthredinidæ* captured by Lord in Vancouver's Island. *Sirex* and *Chrysis* represent the last-named family! Lord's Naturalist in Vancouver's Island &c. ii. pp. 341–342.

Dietrich publishes (Mitth. schw. ent. Gesellsch. ii. pp. 347–372) a list of Hymenoptera inhabiting the canton of Zurich. The number of species cited is 300.

Radoszkowsky indicates the species of this order taken by Solsky and himself in the St.-Petersburg district. Horæ Soc. Ent. Ross. v. pp. 167–168.

Smith has published (Ent. Annual, 1869, pp. 65–82) his usual notice of advances made in the study of the British Hymenoptera during the past year. In his concluding remarks he discusses the question of the origin of the sexes in Bees.

Boisduval (Ent. Hortic. pp. 363–425) gives a general account of the natural history of the insects of this order, referring especially to the Sawflies as injurious garden-insects.

C. Horne notices the habits of some Indian Hymenopterous Insects (Proc. Ent. Soc. Lond. 1868, p. xlix).

Anthophila.

Radoszkowsky (Horæ Soc. Ent. Ross. v. pp. 73–90) publishes a series of notices and descriptions of Russian Bees, several of them new. Several species are merely cited by name as additions to the Russian lists; others are described and figured by the author, or made the subjects of synonymic notes, namely:—*Panurgus frontalis* (Fab.)=*nasutus* (Spin.)=*fasciatus* (Giraud); *Nomia diversipes* (Latr.)=*humeralis* (Costa); *N. aurocincta* (Costa); *Chalicodoma muraria* (Fab.); *Megachile caucasica* (Lep.), p. 80, pl. 3. figs. 9 *a*, 9 *b* (anus of ♂); *Osmia hamata* (Eversm.); *Epeloides ambiguus* (Giraud), p. 81, pl. 3. fig. 5; *Ammobates* (Latr.), characterized p. 84, and anal segment figured pl. 3. figs. 7 *a*, 7 *b*; *A. kirbyanus* (Lat.)=*punctatus* (Fab.)=*schottii* (Eversm.) =*Nomada albomaculata* (Luc.), p. 84; *Pasites schottii* (Lat.)=*brevicornis* (Panz.)+♂ *atra* (Lat.)+*fasciata* (Eversm.), p. 85, anal segment of ♀ pl. 3. figs. 8 *a*, 8 *b*; *Bombus sylvarum* (Linn.), with which the author places as varieties the following forms—*equestris* (Fab.), *veteranus* (Fab.), *fragrans* (Pall.), and *flavidus* (Eversm.),—and suggests that the same may probably be done with *B. autumnalis* (Dahlb.), *burellanus* (Dahlb.), *rufescens* (Eversm.), and *intercedens* (Nyl.), *l. c.* pp. 86–90.

Cœlioxys. Smith (Entomologist, iv. pp. 1–9) revises the British species of this genus, of which he admits six—his *C. sponsa* being now regarded by him as the ♂ of *C. simplex* (Nyl.), whilst *C. mandibularis* (Nyl.) is restored to specific rank. The characters of the species are briefly indicated by Smith (pp. 2–5), and those presented by the apex of the abdomen figured (p. 3, figs. 1–18). Smith remarks upon the power possessed by the species of *Cœlioxys*, and some other Bees, of emitting a powerful odour when disturbed (pp. 8–9). In the case of the parasitic forms he thinks this may be a protective provision.

Nomada mistura (Smith) is probably the male of *N. xanthosticta* (Kirby), according to Bold. Bold also notices the characters and habits of *N. borealis* (Zett.). Ent. M. Mag. iv. p. 284.

Packard has concluded his sketch of the natural history of the Bees (Amer. Naturalist, i. pp. 596–606). He describes the habits of the *Andrenæ*, *Nomadæ*, and *Halicti*, and figures the nest of *A. vicina* (Smith), *l. c.* p. 597, fig. 1, the larva of this species (*l. c.* p. 601, fig. 2), and the larva and pupa of *Halictus parallelus* (ibid., figs. 2 & 3).

Peckolt has observed that in a hive of *Trigona* there is never more than a single impregnated female or queen; he has also observed swarming in the case of *T. ruficrus*. He says that the mode of life of these insects is nearly identical with that of *Apis mellifica*. Smith, Trans. Ent. Soc. Lond. 1868, pp. 133–134.

Lucas describes the transformations of *Xylocopa violacea*, and figures the larva and pupa (Ann. Soc. Ent. Fr. 4e sér. viii. pp. 727–736, pl. 12. figs. 4–6).

Desborough publishes (Trans. Ent. Soc. Lond. 1868, pp. 225–230) some observations on the duration of life in the Honey-Bee, and on the number of Bees produced during the year. He records an instance of a queen living for five years and four months, but thinks that, under ordinary circumstances, the limit is three or four years. With respect to the workers no data can be given; but the number dying in the hive is so small that it is to be inferred that the majority fall victims to dangers outside the hive.

F. Smith remarks upon Desborough's calculation of the fecundity of the Queen Bee, and contrasts it with the results obtained by Dzierzon and the "Devonshire Bee-keeper." Ent. M. Mag. v. pp. 71–72.

Packard has published (Amer. Natural. ii. pp. 195–205) a paper, illustrated with two plates, on the parasitic enemies of the Hive-Bee. He describes and figures *Phora incrassata* (pl. 4. fig. 1, and larva and pupa figs. 2 & 3), *Braula cæca* (pl. 4. fig. 4), *Trichodes apiarius* (pl. 4. fig. 6, with larva and pupa), *Meloë angusticollis* (pl. 4. fig. 7) and the transformations of *Meloë* (figs. 8–11), *Sitaris*, *Stylops* (*Stylops childreni*, pl. 4. fig. 14, ♀ fig. 13, abdomen of stylopized Bee fig. 12, young larvæ pl. 5. fig. fig. 6), *Xenos peckii*, *Gordius subbifurcus*, *Mermis albicans*, and *Mucor mellitophorus* (pl. 4. fig. 15). Packard also notices the habits of *Apathus ashtoni* (pl. 5. fig. 1), *Conops*, *Volucella*, and the larva of a fly allied to *Anthomyia* (pl. 5. fig. 5), *Antherophagus ochraceus* (pl. 5. fig. 4), *Nephopteryx edmundsii* (pl. 5. fig. 2), *Microgaster nephopterycis* (pl. 5. fig. 3), *Anthophorabia megachilis* (pl. 5. fig. 7), *Pteratomus putnami*, and a species of mite (pl. 5. fig. 9).

W. J. Beal states that the Honey-Bee visits only those flowers of *Ribes aureum* which have been broken into by the Baltimore Oriole. The tube of the flower is too long for the Bee to penetrate. Amer. Natural. ii. p. 380.

New genera and species :—

Œstropsis *, g. n., Smith, Trans. Ent. Soc. Lond. 1868, p. 253. Antennæ clavate, scape shorter than joint 3, which is much attenuated; maxillary palpi 6-jointed, joints successively decreasing; marginal cell rounded at its apex, 3 submarginals, 1 a third longer than 2, 2 and 3 narrowed towards the marginal, recurrent veins received in the middle of 2 and 3. Sp. *Œ. pubescens*, sp. n., Smith, *l. c.* p. 253, Champion Bay and South Australia.

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* Altered to *Gastropsis* by Smith, Proc. Ent. Soc. Lond. 1868, p. xxxix.

Psænythia, g. n., Gerstäcker, Arch. für Naturg. 1868. Allied to *Panurgus*, especially in the structure of the labium and its palpi; fore wings with three closed cubital cells; head very large in ♂; tibial spurs denticulated. Sp. *P. philanthoides*, Gerst. *l. c.* p. 127, Mendoza; *P. thoracica*, Gerst. *l. c.* p. 129, Paraná; *P. burmeisteri*, Gerst. ibid., Paraná; *P. capito*, Gerst. *l. c.* p. 131, South Brazil; *P. nomadoides*, Gerst. *l. c.* p. 132, Brazil; *P. picta*, Gerst. ibid., Paraná; *P. chrysorrhœa*, Gerst. *l. c.* p. 133, South Brazil; *P. facialis*, Gerst. *l. c.* p. 135, Banda oriental; *P. trifasciata*, Gerst. *l. c.* p. 136, Paraná; and *P. annulata*, Gerst., ibid., South Brazil.

Ammobatoides, g. n., Radoszkowsky, Horæ Soc. Ent. Ross. v. p. 82. Allied to *Ammobates*; maxillary palpi 6-jointed, basal joint globular; abdomen flattened, segment 5 and anus in ♀ slightly carinated above, semicircular beneath; radial cell elongate, oval, rounded at the end; 3rd cubital scarcely indicated. Sp. *Philoremus abdominalis* (Eversm.) = *punctatus* (Germ.) + *hirsutulus* (Eversm.), p. 82, pl. 3. figs. 6*a*, 6*b* (anal extremity); and *P. melectoides* (Smith), p. 83, pl. 3. fig. 4.

Andrena mellea, Cresson, Trans. Amer. Ent. Soc. i. p. 384, New Mexico.

Andrena eversmanni, Radoszkowsky, Horæ Soc. Ent. Ross. v. p. 74, pl. 3. fig. 1, Kirghise Steppes; *A. oulskii*, Radoszk. *l. c.* p. 75, pl. 3. fig. 2, Bakou; *A. dagestanica*, Radoszk. *l. c.* p. 76, Daghestan.

Andrena opaca, Morawitz, *l. c.* p. 153, Nice.

Halictus caucasicus, Radoszkowsky, *l. c.* p. 77, Caucasus.

Prosopis brachycephala, Morawitz, *l. c.* p. 155, Nice.

Prosopis rubicola, Smith, Ent. Ann. 1869, p. 74, England.

Colletes spectabilis, Morawitz, *l. c.* p. 154, Nice.

Colletes kirgisica, Radoszkowsky, *l. c.* p. 77, pl. 3. fig. 3, Kirghise Steppes.

Colletes. The following new species of this genus are described by Cresson (Proc. Bost. Soc. Nat. Hist. xii.):—From Canada and the United States: *C. valida*, *l. c.* p. 165; *C. propinqua*, ibid.; *C. compacta*, *l. c.* p. 166; *C. canadensis*, ibid.; *C. distincta*, *l. c.* p. 167; *C. americana*, ibid.; *C. simulans*, *l. c.* p. 168; *C. consors*, ibid.; and *C. albescens*, ibid. From Mexico: *C. azteca* *l. c.* p. 169; *C. æthiops*, ibid.; *C. punctipennis*, ibid.; and *C. mexicana*, *l. c.* p. 170.

Lamprocolletes rubellus, Smith, Trans. Ent. Soc. Lond. 1868, p. 253, West Australia.

Stenotritus smaragdinus, Smith, *l. c.* p. 254, Champion Bay.

Nomia nortoni, Cresson, Trans. Amer. Ent. Soc. i. p. 385, and *N.*? *apacha*, Cresson, *l. c.* p. 386, New Mexico, Colorado.

Perdita? *albipennis*, Cresson, *l. c.* p. 386, New Mexico, Colorado.

Anthidium occidentale, Cresson, *l. c.* p. 386, and *A. atrifrons*, Cresson, *l. c.* p. 387, New Mexico, Colorado.

Melissodes menuachus, Cresson, *l. c.* p. 388, New Mexico, Colorado.

Crocisa albo-maculata, Smith, *l. c.* p. 258, Champion Bay.

Lithurgus cognatus, Smith, *l. c.* p. 255, Champion Bay.

Megachile. Smith describes the following new species of this genus from Champion Bay, Australia:—*M. monstrosa*, *l. c.* p. 256; *M. fabricator*, ibid.; *M. fumipennis*, *l. c.* p. 257; *M. sexmaculata*, ibid.; *M. imitata*, ibid.; and *M. nasuta*, *l. c.* p. 258.

Bombus flavifrons, Walker, Lord's Naturalist &c. ii. p. 343, Vancouver's Island.

Osmia baïcalensis, Radoszkowsky, *l. c.* p. 80, Lake Baical.

Osmia ligurica, Morawitz, Horæ Soc. Ent. Ross. v. p. 150, and *O. scutellaris*, Morawitz, *l. c.* p. 151, Nice.

Heriades foveolata, Morawitz, *l. c.* p. 152, Nice.

Vespidæ.

E. L. Ormerod has published in a small volume a very good history of the British Social Wasps, the greater part of which is devoted to the description of the anatomy and physiology and of the œconomy of these insects. The characters of the species are indicated, pp. 35–47, and illustrated by good figures of the three forms of each, with outline diagrams of the markings of the face, as follows:—*Vespa crabro*, pl. 1; *V. britannica* (=*norvegica*), pl. 2. fig. 1; *V. sylvestris* (=*holsatica*=*campanaria*), pl. 2. fig. 2; *V. arborea* (=*borealis*), pl. 3. fig. 1; *V. germanica*, pl. 3. fig. 2; *V. vulgaris*, pl. 4. fig. 1; and *V. rufa*, pl. 4. fig. 2. The remainder of the plates are occupied by figures of the nests of the various species. The mode of increase of the nests is shown on plates 5 and 6, which contain figures of the very early nests of a Tree-Wasp (pl. 5. fig. 1) and *V. crabro* (pl. 6. fig. 1) and of later nests of *V. britannica*? (pl. 5. fig. 2) and *V. sylvestris* (pl. 6. fig. 2). The nest of *V. crabro* is figured in pl. 7; that of *V. vulgaris* in pl. 8; that of *V. germanica* in pl. 9; that of *V. rufa* in pl. 10; that of *V. britannica* in pl. 11, and its interior in pl. 14; that of *V. sylvestris* in pl. 12. Plate 13 shows four nests made successively by the same swarm of *V. britannica* in a hedge.

Lucas notices a nest of *Polistes gallica* constructed in part of blue paper, the insect having been confined in a room where this material was to be found. Bull. Soc. Ent. Fr. 1868, pp. xxv–xxvi. This observation is confirmed by Giraud by an observation made upon a nest of *Polistes* found in the open forest. Ibid. p. xxvii.

Morawitz (Horæ Soc. Ent. Ross. v.) refers to the varieties of several species of this family. *Eumenes fulva* and *tabida* (Eversm.) are vars. of *E. dimidiatus* (Brullé), *l. c.* pp. 145, 146; *Odynerus simplex*, ♀ var. described, *l. c.* p. 146; *O. floricola* (Sauss.)=? *ephippium* (Germ.), described with numerous varieties, *l. c.* p. 147; *O. opacus* and *ballioni* (Mor.), vars., *l. c.* p. 148; *O. limbiferus* (Mor.), var., *l. c.* p. 149; *O. phaleratus* (Panz.), vars., ibid.; *O. latipalpis* (Mor.)=*Pterocheilus pallasii* (Klug), ibid.

Odynerus basalis (Smith) is described and figured by Smith as a new British species. Ent. Ann. 1869, p. 73, front. fig. 1.

New species:—

Sybillina, g. n., Westwood, Trans. Ent. Soc. Lond. 1868, p. 329. Allied to *Belonogaster* (?). Sp. *S. ænigmatica*, sp. n., Westwood, *l. c.* p. 329, Hayti.

Odynerus rufinodus, Cresson, Trans. Amer. Ent. Soc. i. p. 381, and *O. toas*, Cresson, ibid., New Mexico.

Pterochilus lewisii, Cresson, *l. c.* p. 382, New Mexico.

Polistes navajoe, Cresson, *l. c.* p. 383, and *P. flavus*, Cresson, ibid., New Mexico.

Vespa japonica, Smith, Ent. M. Mag. iv. p. 279, and *V. simillima*, Smith, *l. c.* p. 280. The latter probably the worker of the former, the nest of which is described.

Pompilidæ.

Pompilus dimidiatus (Fab.). According to Erber (Verh. zool.-bot. Ges. in Wien, xviii. p. 906) the larva of this species lives parasitically upon *Eresus ctenizoides* (Koch).

Bold records the occurrence in Cumberland of *Pompilus melanarius* (V. d. Lind.) and *Passalœcus monilicornis* (Dahlb.), and describes the characters of these species. Ent. M. Mag. iv. pp. 226, 227.

Nomadina, g. n., Westwood, Trans. Ent. Soc. Lond. 1868, p. 328. Allied to *Trigonalys*. Sp. *N. smithii*, sp. n., Westwood, *l. c.* p. 328, Amazons.

New species:—

Pompilus comparatus, Walker, Lord's Naturalist in Vancouver's Island &c., ii. p. 341, and *P. pyrrhomelas*, Walker, ibid., Vancouver's Island.

Pompilus. Smith (Trans. Ent. Soc. Lond. 1868) describes the following 9 new Australian species of this genus:—*P. velox*, *l. c.* p. 241; *P. irritabilis*, *l. c.* p. 243, and *P. infandus*, *l. c.* p. 244, precise origin not stated; *P. lugubris*, *l. c.* p. 242, *P. distinctus*, ibid., and *P. melancholicus*, *l. c.* p. 244, from Champion Bay; *P. tricolor*, *l. c.* p. 242, Adelaide; *P. diversus*, *l. c.* p. 243, Sydney or Moreton Bay; and *P. vespoides*, *l. c.* p. 244, South Australia.

Priocnemis affectata, Smith, *l. c.* p. 245, and *P. defensor*, Smith, ibid., South Australia; *P. polydorus*, Smith, *l. c.* p. 246, Australia; and *P. ephippiata*, Smith, ibid., Adelaide.

Trigonalys pulchella, Westwood, Trans. Ent. Soc. Lond. 1868, p. 327, Ceylon; *T. jucunda*, Westwood, ibid., Amazons; and *T. lugubris*, Westwood, *l. c.* p. 328, Amazons.

Crabronidæ.

Smith describes the ♂ of his *Paragia vespiformis*, Trans. Ent. Soc. Lond. 1868, p. 250.

Pelopœus fistularis (Dahlb.), called "Marimbouda amarella" at Catagallo, makes a clay nest, and stores it with spiders. *Trypoxylon albitarse* is called "Marimbouda da Casa," or "House-wasp," because it builds generally in houses; its nest contains from four to six chambers, which are stored with spiders, and in each of them one egg is laid. A large species of *Pepsis*, called "Marimbouda Accii" attacks and destroys the large bush-spider, which is ten times its size. Smith (from Peckolt's notes), Trans. Ent. Soc. Lond. 1868, p. 135, where several other species of Hymenoptera are referred to.

A wasp, probably *Stizus speciosus*, is said by C. W. Taylor to seize and carry off *Cicadæ*, Amer. Natural. ii. p. 217.

New species:—

Ammophila impatiens, Smith, Trans. Ent. Soc. Lond. 1868, p. 247, Champion Bay; *A. ardens*, Smith, ibid., Swan River.

Sphex argentifrons, Smith, *l. c.* p. 248, Champion Bay.

Pison nitidus, Smith, *l. c.* p. 248, Champion Bay.

Coloptera wrightii, Cresson, Trans. Amer. Ent. Soc. i. p. 378, New Mexico.

Gorytes propinquus, Cresson, *l. c.* p. 379, and *G. tricolor*, Cresson, *l. c.* p. 380, New Mexico.

Gorytes ornatus, Smith, *l. c.* p. 248, Champion Bay.

Crabro neglectus, Smith, *l. c.* p. 249, South Australia; *C. nigro-maculatus*, Smith, ibid., and *C. tridentatus*, Smith, *l. c.* p. 250, Moreton Bay.

Paragia morosa, Smith, *l. c.* p. 251, *P. concinna*, Smith, ibid., and *P. nasuta*, Smith, *l. c.* p. 252, Champion Bay.

Scoliidæ.

Cresson publishes (Trans. Amer. Ent. Soc. i. pp. 377, 378) the following notes on the synonymy of species of the genus *Elis* described by him. His *Scolia regina*=*E. xantiana* (Sauss.), of which *S. flavosignata* (Cress.) is probably the ♂; *S. consors* (Cress.) is distinct from *E. consors* (Sauss.), and Cresson names it *E.* (*Dielis*) *zonaria* (*l. c.* p. 378).

Dimorphoptera, g. n., Smith, Trans. Ent. Soc. Lond. 1868, p. 238. Allied to *Myzine*; but the marginal cell receives the apical vein of the third submarginal at its extreme apex. Sp. *M. signata, sabulosa, anthracina, fusci-pennis*, and *unicolor*. N. sp. *D. scoliiformis*, Smith, *l. c.* p. 238, Moreton Bay; *D. nigripennis*, Smith, *l. c.* p. 239, Australia; *D. morosa*, Smith, ibid., Australia; *D. clypeata* and *D. fastuosa*, Smith, *l. c.* p. 240, Champion Bay.

Scolia (*Dielis*) *intrudens*, sp. n., Smith, *l. c.* p. 241, Champion Bay.

Scolia (*Discolia*) *lecontei*, sp. n., Cresson, Trans. Amer. Ent. Soc. i. p. 376, and *S.* (*D.*) *flavocostalis*, sp. n., Cresson, *l. c.* p. 377, New Mexico.

Mutillidæ.

Thynnus. Of this genus Smith (Trans. Ent. Soc. Lond. 1868) describes 11 new Australian species, namely:—*T. ochrocephalus*, *l. c.* p. 231, *T. seductor*, *l. c.* p. 234, *T. subinterruptus*, *l. c.* p. 235, *T.* (*Agriomyia*) *irritans*, ibid., *T.* (*A.*) *incensus*, *l. c.* p. 236, and *T.* (*A.*) *baccatus*, ibid., from Champion Bay; *T. campanularis*, *l. c.* p. 232, Sydney; *T. oblongus*, *l. c.* p. 232, Melbourne; *T. conspicuus*, *l. c.* p. 233, and *T. impetuosus*, ibid., South Australia; and *T. audax*, *l. c.* p. 234.

Ælurus volatilis, Smith, *l. c.* p. 237, Adelaide.

Tachypterus albopictus, Smith, *l. c.* p. 237, Australia.

Formicidæ.

Von Hagens publishes (Berl. ent. Zeitschr. 1868, pp. 265–268) some notes on various species of Ants.—1. *F. rufa*: two forms occur, in one of which the abdomen is densely setose, in the other naked. The author finds that the hairy form quits its nest at the approach of winter, and takes up its abode in the ground; he seems to think that this peculiarity, in conjunction with the differential characters, may justify its being regarded as a distinct species. 2. *F. congerens*: the winged forms appear several times in the year from the same colony, usually only of one sex. 3. *Polyergus rufescens*: notice of its predatory excursions. 4. *Lasius flavus*: notice of the winged forms. The author further refers to the occurrence of *Chennium* with *Strongylognathus testaceus*, and to the occurrence of *Asemorhoptrum lippulum* near Cleves.

E. Norton publishes (Amer. Naturalist, ii. pp. 57–72) some notes on the

Mexican species of Ants sent by F. Sumichrast. The species referred to are the following:—*Formica esuriens*, *F. fulvacea* (large worker figured pl. 1. fig. 1), *F. nitida*, *F. nacerda*, *Tapinoma piceata*, *T. tomentosa* (worker pl. 1. fig. 2), *Polyrhachis arboricola* (worker pl. 1. fig. 3), *Ponera strigata*, *P. pedunculata*, *Ectatomma ferruginea* (worker pl. 1. fig. 4), *Eciton hamata*, *E. mexicana* (workers pl. 1. figs. 5 & 6), *E. brunnea*, *E. sumichrasti* (small worker pl. 1. fig. 7), *Pachycondyla orizabana*, *Pseudomyrma bicolor* (worker pl. 1. fig. 8), *P. flavidula*, with figure of Mimosa-spines inhabited by this species; and *P. bicolor*, *P. thoracica*, *Atta clypeata*, *Œcodoma mexicana* (female pl. 1. fig. 9, worker fig. 10), *Cryptocerus laminatus*, and *C. multispinosus* (worker pl. 1. fig. 11).

Eciton. Sumichrast publishes (Trans. Amer. Ent. Soc. ii. pp. 39–44) some notes on the habits of the Mexican species of this genus. The workers only are known; but Sumichrast is inclined to think that Smith is right in supposing that the genus *Labidus* is founded upon males of *Eciton*. The species referred to by Sumichrast are identified as follows by Norton (*l. c.* pp. 44–46):—*E. hamata* (Fab.), *E. mexicana* (Guér.), *E. rapax* (Smith)=*brunnea* (Nort.), *E. crassicornis* (Smith), *E. sumichrasti* (Nort.), and two new species.

Von Hagens's notes on Ants with mixed colonies (see 'Record,' 1867, p. 303) are published in Verhandl. naturg. Ver. preuss. Rheinl. und Westph. 1867, Corr.-Bl. pp. 49–54.

D'Esterno publishes (Rev. et Mag. Zool. 1868, pp. 435–439) some observations on ants living in mixed colonies. He denies that the relations of the black to the red ants are those of slaves to their masters, explains away Huber's statement that the red ants require to be fed by the black ones, and declares that the plundering expeditions of the former are undertaken for the purpose of bringing in larvæ, not to maintain their stock of slaves, but to furnish food for the colony. He has observed pregnant females of the black species in the red colonies, and has seen them maltreated by the black workers when apparently attempting to escape from the nest. The red ants fed freely upon pieces of meat given to them.

Sanborn publishes some notes on the use of the antennæ as a means of communication by ants. Proc. Essex Inst. v. Meetings, pp. 13–14.

New genera and species:—

Brachymyrmex, g. n., Mayr, Ann. Soc. Nat. Modena, iii. p. 163. Allied to *Camponotus*: ☿ with minute ocelli, distinctly impressed frontal area, and 9-jointed antennæ; joints of funiculus gradually increasing, apical joint very large, thickened, and fusiform: ♂ with 10-jointed antennæ. Sp. *B. patagonicus*, Mayr, *l. c.* p. 164, Buenos Ayres.

Dorymyrmex, g. n., Mayr, *l. c.* p. 165. Allied to *Hypoclinea*: ☿, ocelli distinct; antennæ 12-jointed, scape long and slender, funiculus filiform, joint 1 longest, the rest gradually decreasing to penultimate, which is shortest; lower part of head with a circle of long hairs. Sp. *D. planidens*, Mayr, *l. c.* p. 165, and *D. tener*, Mayr, *l. c.* p. 166, South Brazil.

Pogonomyrmex, g. n., Mayr, *l. c.* p. 169. Allied to *Atta*: ♀ ☿, antennæ 12-jointed, scarcely clavate, joints 3–11 subequal; ocelli 0; frontal area with an obtuse angle behind: ♂, antennæ 13-jointed, scape short, joint 1 of funiculus very short, 2 very long, rest gradually shorter. Sp. *Myrmica gayi* (Spin.), *M. barbata* (Smith), *Atta crudelis* (Smith), and probably *Formica*

badia (Lat.). Sp. n. *P. coarctatus*, Mayr, *l. c.* p. 170, *P. rastratus*, Mayr, *l. c.* p. 171, and *P. carbonarius*, Mayr, *l. c.* p. 172, South Brazil.

Camponotus punctulatus, Mayr, *l. c.* p. 161, and *C. bonariensis*, Mayr, *l. c.* p. 162, South Brazil.

Hypoclinea humilis, Mayr, *l. c.* p. 164, Buenos Ayres.

Labidus strobeli, Mayr, *l. c.* p. 166, South Brazil; *L. sulcatus*, Mayr, *l. c.* p. 168, Buenos Ayres.

Eciton tepeguas, Norton, Trans. Amer. Ent. Soc. ii. p. 46, and *E. clavicornis*, Norton, ibid., Mexico.

Eciton nitens, Mayr, *l. c.* p. 168, Buenos Ayres.

Pheidole aberrans, Mayr, *l. c.* p. 172, and *P. cordiceps*, Mayr, *l. c.* p. 174, Buenos Ayres.

Solenopsis parva, Mayr, *l. c.* p. 175, Mendoza.

Cryptocerus quadratus, Mayr, *l. c.* p. 175, San Luis.

Chrysididæ.

Chrysis smaragdicolor, sp. n., Walker, Lord's Naturalist &c. ii. p. 343, Vancouver's Island.

Ichneumonidæ.

Evaniides.

Aulacus. Westwood (Trans. Ent. Soc. Lond. 1868) describes the following new species of this genus:—*A. nobilis*, *l. c.* p. 329, Amazons; *A. formosus*, *l. c.* p. 330, South Australia; *A. stigmaticus*, ibid., Singapore; *A. rufitarsis*, ibid., Van Diemen's Land; *A. hæmorrhoidellus*, *l. c.* p. 331, Amazons; *A. spinifer*, ibid., Amazons; and *A.* (*Aulacinus*) *mœrens*, ibid., South Australia.

Ichneumonides.

Cresson has commenced (Trans. Amer. Ent. Soc. i. pp. 289–312, and ii. pp. 89–114) the publication of a list of the North-American Ichneumonidæ, with descriptions of numerous new species. The list includes the authors' names, but no references to descriptions: a few synonyms are indicated, and the distribution is given. Of previously described species the author has notes on the following:—

Ichneumon viola (Cress.), *l. c.* i. p. 292; *I. saucius* (Cress.), *l. c.* p. 293; *I. atrifrons* (Cress.), probably = ♀ *comptus* (Say), *l. c.* p. 298; *I. multor* (Harr.), *l. c.* p. 299; *I. calitergus* (Harr.), ibid.; *I. lætus* (Brullé), *l. c.* p. 300; *I. milvus* (Harr.), *l. c.* p. 305; *I. comes* (Cress.), *l. c.* p. 301; *I. trogiformis* (Cress.), *l. c.* p. 307, probably type of a new genus, and identical with *Joppa ferrugator* (Fab.); *I. lewisii* (Cress.), ibid.; *I. fuscifrons* (Cress.), ibid.; *I. duplicatus* (Say), *l. c.* p. 309; *I. scitulus* (Cress.), *l. c.* p. 310; *Trogus tricinctus* (Cress.) is probably a species of *Joppa*, vol. ii. p. 92; *Tryphon submarginatus* (Cress.), *l. c.* p. 105; *Exochus* (*Tryphon*) *carinatus* (Cress.), *l. c.* p. 114.

Campoplex. Förster publishes (Verh. zool.-bot. Ges. in Wien, xviii. pp. 761–876) a monographic revision of the genus *Campoplex* (Grav.) as restricted by Holmgren. Of this group Gravenhorst described only 4 species. Holmgren added 6 from Scandinavia and Lapland; the number here de-

scribed by Förster is 72. These are tabulated on pp. 771–776, and afterwards fully described. The characteristic parts of the insects (wings and metanotum) are figured on plate 10. Besides the 72 species described by and known to Förster, among which are included *C. cultrator*, *sugillator*, and *mixtus* of Gravenhorst, the following are recorded as described species unknown to him:—*C. floricola* (Grav.) and *C. carinifrons*, *bucculentus*, *nitidulator*, *melanarius*, *lapponicus*, and *leptogaster* (Holmgr.).

Wesmael (Bull. Acad. Roy. Belg. 2e sér. xxiv. pp. 441–482) remarks upon the synonymy and characters of numerous species of this family. Under his subgenus Eupalamus, he corrects Taschenberg's description of the orbits of *E. oscillator* (Wesm.)=*deliratorius*+*pallipes* (Grav.). Under Chasmodes, he states that in *C. motatorius* ♀ the sixth abdominal segment has the back white, and notices the ♂ of *C. lugens*. Under Ichneumon the following species are referred to:—*I. fabricator* (Grav.), vars. of ♂; *I. nigritarius* and *fabricator* ♀, the distinctive character derived from the closure of the superomedial areole of the metathorax is insufficient; *I. fugitivus* (Grav.), distinctive characters indicated; *I. rufifrons* and *pallidatorius* are ♂ and ♀ of the same species=*rufifrons* (Wesm.); *I. multiguttatus* (Grav.) and *centummaculatus* (Christ.) are ♂ and ♀ of one species, which is described; *I. leucocerus* (Grav.) ♂ =*sinister* (Wesm.)=*semiorbitalis* (Grav.) ♂ var. 1 ex parte; *I. luteiventris* (Grav.), variation; *I. faunus* (Grav.), notes on the ascription of the name and on the course to be adopted in selecting the name of a species formed by the conjunction of two nominal species founded on different sexes; *I. inquinatus* (Wesm.); *I. sarcitorius* (Grav.), varieties; *I. gemellus* (Grav.), characters and variation. Under Amblyteles: *A. camelinus* (Wesm.), characters and varieties; *A. uniguttatus* (Grav.), characters of ♂ discussed at great length and tabulated; *A. panzeri* (Grav.), correction of character of ♂; *A. occisorius* (Grav.), varieties; *A. crispatorius* (Fab.), varieties; *A. natatorius* (Grav.), of which *I. xanthozosmus* (Grav.) is the ♂, variations indicated and illustrated by figures (figs. 1–4, ♀, 5–6, ♂ abdomen); *A. inspector* (Wesm.), var. Heresiarches *eudoxius* (Wesm.), correction of character of mandibles. Oronotus *coarctatus* (Wesm.) = *binotatus* (Grav.). In the additional note (*l. c.* pp. 537–543) Wesmael notices two species which have been referred to above, and furnishes alphabetical indices to his memoirs on the European *Ichneumones Platyuri*, *Amblypygi*, *Oxypygi*, and *Pneustici*.

Ichneumon crassipes and *latrator* (Grav.) are ♀ and ♂ of the same species, and include, as a short-winged variety, *Brachypterus means* (Grav.)=*Pterocormus means* (Först.). T. A. Marshall, Ent. M. Mag. v. p. 155.

Aptesis. Marshall remarks that in order that it may include Gravenhorst's *Pezomachus hemipterus* the character given by Förster for this genus must be modified by the omission of the statement that the first segment is "punctate, not longitudinally wrinkled." This segment is distinctly wrinkled in *A. hemiptera* and in one of Marshall's new species. Ent. M. Mag. v. p. 155.

Pimpla nucum (Ratz.). Tschek (Verh. zool.-bot. Ges. in Wien, xviii. pp. 446–448) describes the two sexes of an Ichneumon which he identifies with this species, and of which he thinks the ♂ may be one of the forms of Gravenhorst's *Ephialtes inanis*.

Smith records the breeding of *Ophion macrurus* (Drury), a parasite of

Bombyx cecropia, from pupæ of *B. cynthia* bred in America. Proc. Ent. Soc. Lond. 1868, p. xxxii.

Packard notices a species of *Platygaster* which is parasitic upon the eggs of *Clisiocampa americana* (Pract. Entom. i. pp. 14, 15).

H. Moncreaff describes the mode of life of an Ichneumon infesting the larva of *Zygæna filipendulæ*. Entomologist, iv. pp. 124–126.

New genera and species :—

Psilomastax, g. n., Tischbein, Stett. ent. Zeit. 1868, p. 255. Allied to *Trogus*, but with the anterior margin of the clypeus broadly emarginate. Sp. *P. pyramidalis*, sp. n., Tischbein, *l. c.* p. 255, Hungary (from *Apatura iris*).

Platymischos, g. n., Tischbein, *l. c.* p. 257. Allied to *Platylabus*; metathorax with a strong tooth on each side; abdominal peduncle very broad, bicarinate, strongly wrinkled. Sp. *P. bassicus*, sp. n., Tischbein, *l. c.* p. 257, Herrstein.

Phthinodes, g. n., Tschek, Verh. zool.-bot. Ges. in Wien, xviii. p. 272. Allied to *Pœmenia* (Holmgr.); mandibles with unequal teeth at apex; metathoracic areas obsolete, spiracles circular, placed before the middle; areola triangular; abdomen linear-cylindrical, segment 1 narrow, gradually widened a little towards apex, no keels or canalicula; ovipositor scarcely so long as the abdomen. Sp. *Ephialtes hecticus* (Grav.).

Œdemopsis, g. n., Tschek, *l. c.* p. 276. Allied to *Xorides*; clypeus tumid, with a semiglobose tubercle at its apex; labrum very large, convex; metathorax produced above posterior coxæ, partially areolated; abdomen subpetiolate; ovipositor straight, less than half as long as the abdomen. Sp. *Œ. rogenhoferi*, sp. n., Tschek, *l. c.* p. 277, pl. 2 B, Lower Austria.

Antipygus, g. n., Tschek, *l. c.* p. 438. Allied to *Notopygus* (Holmgr.); ovipositor entirely concealed; abdominal segments not emarginate above. Sp. *A. megerlei*, sp. n., Tschek, *l. c.* p. 439 (*cum. figg.*), Austria.

Xaniopelma, g. n., Tschek, *l. c.* p. 443. Allied to *Ctenopelma* (Holmgr.); antennæ filiform, rather slender; segment 1 of abdomen somewhat curved; areola triangular; claws in ♂ densely pectinate to apex, in ♀ sparingly spinulous only at base. Sp. *X. sericans*, sp. n., Tschek, *l. c.* p. 444, Lower Austria.

Œdicephalus, g. n., Cresson, Trans. Amer. Ent. Soc. ii. p. 27. Between *Hoplismenus* and *Joppa*; head very large and swollen, very broad behind eyes, occiput deeply emarginate; basal foveæ of second abdominal segment broad, transverse, very deep. Sp. *Trogus*? *albovarius* (Cress.); n. sp. *Œ. longicornis*, Cresson, *l. c.* p. 27, *Œ. sororius*, Cress. *l. c.* p. 28, and *Œ. gracilicornis*, Cress. ibid., Mexico.

Exochoides, g. n., Cresson, *l. c.* p. 37. Allied to *Exochus*, but face flat; antennæ longer, and abdomen subpetiolate and clavate. Sp. *E. mexicana* and *E. concinna*, sp. n., Cresson, *l. c.* p. 37, Mexico.

Ichneumon. Tischbein (Stett. ent. Zeit. 1868) describes the following new species:—*I. seticornis*, *l. c.* p. 248, Mehadia; *I. bicoloripes*, *l. c.* p. 249, Pesth; *I. atrocæruleus*, ibid., Dalmatia; *I. jucundus*, ibid., Thuringia; *I. lautus*, *l. c.* p. 250, Birkenfeld; *I. interfector*, *l. c.* p. 251, Herrstein.

Ichneumon. Of this genus Cresson describes the following new North-American species:—*I. galenus*, Trans. Amer. Ent. Soc. i. p. 292, Virginia and Illinois; *I. torvinus*, ibid., Illinois; *I. excultus*, *l. c.* p. 293, New Jersey; *I. apertus*, ibid., Connecticut, New York, Illinois; *I. acerbus*, ibid., Illinois, Massachusetts; *I. histricus*, *l. c.* p. 294, Virginia; *I. ornatipes*, ibid., Vir-

ginia; *I. sagus*, ibid., Massachusetts, Connecticut, &c.; *I. ultus*, *l. c.* p. 295, Connecticut, Virginia; *I. rogalis*, ibid., Connecticut, New York, Virginia; *I. mellipes*, ibid., Canada, Maine; *I. puerilis*, *l. c.* p. 296, Canada; *I. infidelis*, ibid., Connecticut; *I. improvisus*, ibid., New Jersey; *I. sævus*, ibid., Illinois; *I. helvipes*, *l. c.* p. 297, Massachusetts, Connecticut, Illinois; *I. clarus*, ibid., Massachusetts; *I. albomarginatus*, ibid., Mississippi; *I. consignatus*, *l. c.* p. 298, Virginia; *I. robustus*, ibid., Canada; *I. subdolus*, ibid., Maine, Massachusetts; *I. creperus*, ibid., Canada, Virginia, &c.; *I. zebratus*, *l. c.* p. 299, Illinois; *I. zelotypus*, ibid., Virginia; *I. magniceps*, ibid., Cuba; *I. mimicus*, *l. c.* p. 300, Massachusetts, Connecticut; *I. feralis*, ibid., Canada, Massachusetts; *I. dakota*, *l. c.* p. 302, Dakota; *I. inurbanus*, ibid., Virginia; *I. insolens*, ibid., Southern States; *I. semicæruleus*, ibid., Virginia; *I. instabilis*, *l. c.* p. 303, Maine, Virginia, &c.; *I. electus*, *l. c.* p. 304, Connecticut; *I. volesus*, ibid., Massachusetts; *I. nortonii*, ibid., Connecticut; *I. finitimus*, ibid., Connecticut, Pennsylvania, Illinois; *I. hariolus*, *l. c.* p. 305, Massachusetts; *I. hebrus*, ibid., Connecticut, Illinois; *I. hebe*, *l. c.* p. 306, Connecticut, Illinois; *I. fungor* (Nort. MS.), ibid., Connecticut, New York, &c.; *I. hospitus*, ibid., Canada; *I. citrifrons*, *l. c.* p. 307, Connecticut, Pennsylvania; *I. maius*, ibid., Massachusetts; *I. disparilis*, ibid., Connecticut; *I. canadensis*, *l. c.* p. 308, Canada, New York; *I. ventralis**, ibid., Hudson's Bay Territory; *I. signatipes*, ibid., Connecticut, Pennsylvania; *I. anceps*, *l. c.* p. 309, Connecticut, Delaware; *I. W-album*, ibid., Massachusetts, Maryland, &c.; *I. lascivus*, ibid., Illinois; *I. honestus*, *l. c.* p. 310, Virginia; *I. uxorius*, ibid., Cuba; *I. facetus*, *l. c.* p. 311, Virginia; *I. utilis*, ibid., Massachusetts, Connecticut; *I. tumidifrons*, ibid., Illinois; *I. quadriceps*, *l. c.* p. 312, Canada, Connecticut; *I. helvus* and *I. helvolus*, ibid., Connecticut, Pennsylvania, Illinois; *I. vincibilis*, ibid., Illinois. Cresson also describes the following new species from Mexico:—*I. mexicanus*, Trans. Amer. Ent. Soc. ii. p. 2; *I. zapotecus*, *l. c.* p. 3; *I. encaustus*, *l. c.* p. 4; *I. parredes*, ibid.; *I. tepanecus*, *l. c.* p. 5; *I. cholula*, ibid.; *I. toluca*, *l. c.* p. 6; *I. chalco*, *l. c.* p. 7; *I. alvarado*, ibid.; *I. decorosus*, *l. c.* p. 8; *I. centrosus*, ibid.; *I. jugiosus*, *l. c.* p. 9; *I. limitaris*, ibid.; *I. tenuicornis*, ibid.; *I. monitus*, *l. c.* p. 10; *I. totonacus*, ibid.; *I. frivolus*, *l. c.* p. 11; *I. tragicus*, ibid.; *I. infulatus*, *l. c.* p. 12; *I. exquisitus*, ibid.; *I. montezuma*, *l. c.* p. 13; *I. nestor*, ibid.; *I. toros*, *l. c.* p. 14; *I. famelicus*, ibid.; *I. tenebricus*, *l. c.* p. 15; *I. intentus*, ibid.; *I. gracilentus*, *l. c.* p. 16; *I. arista*, ibid.; *I. maritus*, ibid.; *I. tuxtla*, *l. c.* p. 17; *I. subspinosus*, ibid.; *I. toltecus*, ibid.; *I. teres*, *l. c.* p. 18; *I. lectus*, ibid.; *I. chichimecus*, *l. c.* p. 19; *I. lenis*, ibid.; and *I. aztecus*, *l. c.* p. 20.

Hoplismenus ornatus, Cresson, Trans. Amer. Ent. Soc. ii. p. 92, New York.

Hoplismenus. Of this genus Cresson describes the following new Mexican species:—*H. rixosus*, Trans. Amer. Ent. Soc. ii. p. 20; *H. otomitus*, *l. c.* p. 21; *H. munitus*, ibid.; *H. propinquus*, *l. c.* p. 22; *H. picturatus*, ibid.; *H. dissonus*, *l. c.* p. 23; *H. minax*, ibid.; *H. limatus*, *l. c.* p. 24; *H. occiputalis* (sic), ibid.; *H. acclivus*, *l. c.* p. 25; *H. esurialis*, ibid.; *H. scutellaris*, *l. c.* p. 26; and *H. abnormis*, ibid.

Joppa. Cresson describes the following new Mexican species of this genus:—*J. inclyta*, *l. c.* p. 29; *J.*? *egregia*, *l. c.* p. 30; *J.*? *aciculata*, ibid.;

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* The author has described another *I. ventralis* from the Colorado Territory (Proc. Ent. Soc. Phil. iv. p. 250), and this also occurs in his list!

J. sumichrasti, *l. c.* p. 31; *J. decorata*, *l. c.* p. 32; *J. elegantula*, ibid.; and *J. fumipennis*, ibid.

Amblyteles. Tischbein describes the following new species:—*A. regius*, *l. c.* p. 251, Dalmatia; *A. wesmaeli*, *l. c.* p. 253, Thuringia; *A. hungaricus*, ibid., Hungary; and *A. malignus*, *l. c.* p. 254, Vienna (from *Vanessa cardui*).

Trogus. Of this genus Cresson (Trans. Amer. Ent. Soc. ii.) describes the following new North-American species:—*T. atrocæruleus*, *l. c.* p. 92, Louisiana; *T. australinus*, ibid., Florida, Georgia; *T. marginipennis*, *l. c.* p. 93, Dakota; *T. fulvipes*, ibid., Maine; *T. atrox*, ibid., Dakota; *T. occidentalis*, ibid., Dakota; *T. copei*, *l. c.* p. 94, Virginia; *T. bolteri*, ibid., Lake Superior; *T. elegans*, ibid., Maine; and *T. rileyi*, *l. c.* p. 95, Illinois.

Platylabus erberi, Tischbein, *l. c.* p. 256, Dalmatia.

Ischnus elegans, Tischbein, *l. c.* p. 258, Birkenfeld.

Stilpnus tenuicinctus, Cresson, *l. c.* p. 33, Mexico.

Stilpnus americanus, Cresson, *l. c.* p. 95, New York &c.; *S. clypeatus*, Cresson, ibid., Illinois; *S. hudsonicus*, ibid., Hudson's-Bay Territory.

Thalessa austriaca, Tschek, Verh. zool.-bot. Ges. in Wien, xviii. p. 269, Lower Austria.

Ephialtes dux, Tschek, *l. c.* p. 270, and *E. brevicornis*, Tschek, *l. c.* p. 271, Lower Austria.

Pimpla lævigata, Tschek, *l. c.* p. 273, Lower Austria.

Pimpla opacellata, Marshall, Ent. M. Mag. iv. p. 174, reared from *Psyche opacella*.

Polysphincta boops, Tschek, *l. c.* p. 274, Lower Austria.

Lissonota frauenfeldi, Tschek, *l. c.* p. 275, Lower Austria.

Bassus. Cresson describes the following new North-American species:—*B. tibialis*, *l. c.* p. 110, Illinois; *B. frontalis*, *l. c.* p. 111, Connecticut, Pennsylvania, Illinois; *B. concinnus*, ibid., Connecticut; *B. frigidus*, ibid., Great Slave Lake; *B. agilis*, ibid., Connecticut, Illinois; *B. pleuralis*, ibid., Ohio; *B. scutellaris*, *l. c.* p. 112, Illinois; and *B. sycophanta* (Walsh), ibid., New York, Illinois, &c.

Cteniscus annulipes, Cresson, *l. c.* p. 112, and *C. vitticollis*, Cresson, *l. c.* p. 113, Massachusetts; *C. clypeatus*, Cresson, ibid., Great Slave Lake; and *C. consors*, Cresson, ibid., Connecticut.

Xylonomus propinquus, Tschek, *l. c.* p. 279, Lower Austria.

Xorides erosus, Tschek, *l. c.* p. 278, Lower Austria.

Exochus cæruleiventris, *E. tricarinatus*, and *E. pulchripes*, Cresson, *l. c.* p. 38, Mexico.

Exochus propinquus, Cresson, *l. c.* p. 114, New-England States; *E. atrocoxalis*, Cresson, ibid., Dakota; *E. albifrons* (Walsh), Cresson, ibid., Illinois; and *E. semirufus*, Cresson, ibid., Massachusetts, New York, &c.

Mesoleptus. Cresson describes the following new North-American species:—*M. elongatus*, *l. c.* p. 96, Massachusetts; *M. inceptus*, ibid., Massachusetts, Connecticut; *M. propinquus*, *l. c.* p. 97, Massachusetts, Delaware; *M. assiduus*, ibid., Massachusetts; *M. sedulus*, ibid., Massachusetts, New Jersey; *M. insidiosus*, *l. c.* p. 98, Massachusetts; *M. scapularis*, ibid., Connecticut; *M. honestus*, ibid., Connecticut, New Jersey; *M. albifrons*, ibid., Connecticut; *M. luteifrons*, *l. c.* p. 99, Great Slave Lake: *M. fucatus*, ibid., Connecticut, Virginia; *M. cultus*, ibid., New Jersey; *M. eximius*, *l. c.* p. 100, Connecticut; *M. facetus*, ibid., Virginia; *M. albocollaris*, ibid., Illinois; *M. triangularis*,

l. c. p. 101, Illinois; *M. pulcherrimus*, ibid., Connecticut; *M. decens*, ibid., Connecticut, Virginia; *M.*? *muliebris*, *l. c.* p. 102, Virginia; *M.*? *peregrinus*, ibid., Connecticut, New Jersey; *M.*? *ignotus*, *l. c.* p. 103, Virginia; *M.*? *nastutus* (sic), ibid., Pennsylvania.

Mesoleptus. Cresson describes the following as new species from Mexico :— *M. calidus*, *l. c.* p. 33; *M. melleus*, *bardus*, and *imbecillis*, *l. c.* p. 34; *M. emaceratus* and *decorosus*, *l. c.* p. 35; and *M.*? *bucephalus*, *l. c.* p. 36.

Catoglyptus ulbrichi, Tschek, *l. c.* p. 437, Vienna?

Ctenopelma variabilis, Tschek, *l. c.* p. 440, and *C. defectiva*, Tschek, *l. c.* p. 443, Lower Austria.

Mesoleius ephippium, Tschek, *l. c.* p. 445, Lower Austria.

Tryphon croceiventris, Cresson, *l. c.* p. 36, and *T.*? *laticinctus*, Cresson, ibid., Mexico.

Tryphon. Cresson describes the following new North-American species of this genus:—*T. communis*, *l. c.* p. 103, Hudson's Bay to Pennsylvania; *T. scutellaris*, *l. c.* p. 104, Connecticut; *T. varifrons*, ibid., Massachusetts, Connecticut; *T. signatipes*, *l. c.* p. 105, Hudson's Bay Territory; *T. compressiventris*, ibid., Massachusetts, Connecticut; *T. burgessi*, ibid., Massachusetts; *T. tarsalis*, *l. c.* p. 106, Connecticut; *T. æthiops*, ibid., Massachusetts, Connecticut; *T.*? *nasutus*, *l. c.* p. 107, Illinois; *T.*? *rufithoracicus*, ibid., Cuba; *T. crassus*, ibid., Massachusetts, New Jersey; *T. dimidiatus*, *l. c.* p. 108, New Jersey, Pennsylvania; *T. annulipes*, ibid., Great Slave Lake; *T. burrus*, ibid., Connecticut; *T. subcrassus*, *l. c.* p. 109, New-England States; *T. occidentalis*, ibid., Illinois; *T. frontalis*, ibid., Connecticut; *T. philanthoides*, *l. c.* p. 110, Illinois; and *T. articulatus*, ibid., Hudson's-Bay Territory.

Exyston clavatus, Cresson, *l. c.* p. 113, Maine, New York, Illinois, &c.

Phygadenon scoticus, Marshall, Ent. M. Mag. v. p. 154, Perthshire; *Ph. errator*, Marshall, ibid., near London.

Aptesis graviceps, Marshall, *l. c.* p. 155, and *A. stenoptera*, Marshall, *l. c.* p. 156, Milford Haven.

Campoplex. Förster (Verh. zool.-bot. Ges. in Wien, xviii. pp. 776–870) describes 69 new species of this genus, as restricted by Holmgren; they are chiefly from the neighbourhood of Aix-la-Chapelle. It would be useless to cite their names.

Chalcididæ.

Scudder notices the occurrence of parasites of this family in the eggs of *Œdipoda carolina*. Proc. Bost. Soc. Nat. Hist. xii. p. 99.

Tineophaga, g. n., Rondani, Ann. Soc. Nat. Modena, iii. p. 22 (subf. *Encyrtinæ*?). Antennæ 7-jointed, joint 1 of flagellum short, remainder subovate ♀, or oblong ♂, 2–4 in ♂ with long, fimbriate filaments; fore wings with costal vein very slender, its apical branch dilated; abdomen subacuminate at apex, somewhat incurved above, narrowed at base; legs simple, intermediate tibiæ unicalcarate; tarsi 5-jointed. Sp. *T. tischericæ*, sp. n., Rondani, *l. c.* p. 23, pl. 4. figs. 3–7 (details), parasitic on *Tischeria complanella*.

Pelecinella, g. n., Westwood, Proc. Ent. Soc. Lond. 1868, p. xxxv. Allied to *Callimome*; body very long, nearly filiform; head subglobose; antennæ 11-jointed, 2 and 3 minute, 4 long, subcompressed; collar twice as long as head, very narrow; segments 2 and 3 of abdomen a little incrassate, its apex with two large foliaceous lobes; ovipositor nearly as long as abdomen,

curved; stigmatic ramus almost punctiform; apex of posterior tibia and joint 1 of tarsi dilated. Sp. *P. phantasma*, sp. n., Westw. *l. c.* p. xxxvi, Amazons.

Thaumasura, g. n., Westwood, *l. c.* p. xxxvi. Allied to *Cleonymus* and *Epistenia*; antennæ 11-jointed, 3 minute, 4 long; thorax suboval; segments 1–5 of abdomen short, forming an oval mass, 2 last very slender, forming a long tubule for the reception of the ovipositor; stigmatic ramus short, furcate at apex; femora compressed, tarsi simple; ovipositor one-fourth longer than abdomen. Sp. *T. terebrator*, sp. n., Westw. ibid., North Australia.

Solenura, g. n., Westw. *l. c.* p. xxxvi. Allied to preceding; antennæ 11-jointed, slightly thickened at apex, joint 2 small, 3 minute; segments 1–3 of abdomen forming an oval mass, rest tubulate, 6 very long; legs short, simple. Sp. *S. telescopica*, sp. n., Westw. ibid., Java.

Eucharissa, g. n., Westwood, *l. c.* p. xxxvi. Allied to *Eucharis*; head transverse, densely woolly in front; antennæ of 16–22 joints, serrated; abdomen very short, petiole short, legs short, simple. Sp. *E. speciosa*, sp. n., Westw. *l. c.* p. xxxvii, Cape of Good Hope; *E. natalica*, sp. n., Westw. ibid., Natal.

Spilomicrus. Marshall characterizes this genus and its known British species (Ent. M. Mag. iv. pp. 201–203 and 227, 228). Of known species he describes *S. stigmaticalis* (Westw.), *integer* (Thoms.), and *nigripes* (Thoms.). The following are new British species:—*S. basalyformis*, *l. c.* p. 202; *S. hemipterus*, ibid.; *S. abnormis*, ibid.; and *S. nigriclavis*, *l. c.* p. 228.

Loxotropa. Marshall (*l. c.* pp. 228–230) also characterizes this genus and indicates the British species. *Loxotropa tripartita*, *exigua*, and *nigricornis*, spp. nn., Marshall, *l. c.* p. 229, Britain.

Dryinus tarraconensis, Marshall, *l. c.* p. 204, north of Spain (with generic character, *l. c.* p. 203).

PROCTOTRUPIDÆ.

MARSHALL (Ent. M. Mag. v. pp. 157–160) tabulates the British genera of Ceraphrontides, and indicates the species belonging to each which he knows to occur in Britain. His arrangement is as follows:—

1. HABROPELTE (Thoms.) = *Ceraphron* p. (Boh.) = *Megaspilus* (Först.). Sp. 1. *dux* (Curt.) = *scutellaris* (Boh.) + *tibialis* (Boh.); 2. *striolata* (Thoms.).

2. TRICHOSTERESIS (Först.) = *Ceraphron* p. (Boh.) = *Thlibocura* (Thoms.). Sp. *glabra* (Boh.) = *clandestinus* (Nees).

3. LYGOCERUS (Först.) = *Ceraphron* (Thoms.). Sp. 1. *halidayi* (Curt.); 2. *carpenteri* (Curt.) = *basalis* (Thoms.); 3. *ramicornis* (Boh.); 4. *serricornis* (Boh.); 5. *pubescens* (Thoms.).

4. MEGASPILUS (Westw.). Sp. 1. *abdominalis* (Boh.) = *tenuicornis* (Boh.); 2. *syrphi* (Bouché) = *Eupelmus syrphii* (Nees); 3. *borealis* (Thoms.); 4. *arcticus* (Thoms.); 5. *fuscipes* (Nees); 6. *cursitans* (Nees); 7. *halteratus* (Boh.) = *brevipennis* (Nees) = *longicornis* (Boh.); 8. *melanocephalus* (Boh.); 9. *thoracicus* (Nees) = *halteratus*, var. *g* (Boh.); 10. *alutaceus* (Thoms.); 11. *crassicornis* (Boh.) = *sulcatus* (Nees); 12. *rufipes* (Nees); and *Megaspilus atelopterus*, sp. n., Marshall, *l. c.* p. 159, near Milford Haven.

5. LAGYNODES (Först.) = *Microps* (Hal., Thoms.). Sp. *pallidus* (Boh.).

6. CERAPHRON (Jur.) = *Calliceras* (Nees). Sp. 1. *bispinosus* (Nees); 2. *nanus* (Nees) = *pallida* (Thoms.); 3. *nigriceps* (Thoms.).

7. APHANOGMUS (Thoms.). Sp. *hyalinipennis* and *tenuicornis* (Thoms.).

Cynipidæ.

Marshall (Ent. M. Mag. iv.) characterizes the following genera of this family, and describes their British species:—*Biorhiza* (Westw.), p. 171; *Rhoditis* (Hart.), p. 172; *Diastrophus* (Hart.), p. 223; *Spathegaster* (Hart.), p. 224; *Trigonaspis* (Hart.), p. 271; and *Aulax* (Hart.), p. 273. He remarks that the generic name *Teras* was preoccupied in Lepidoptera, and suggests the substitution of *Diplolepis* for *Teras* (Hart.), p. 171.

Giraud (Bull. Soc. Ent. Fr. 1868, pp. li–lv) notices the galls of the following species:—*Cynips callidoma* (Gir.) on the oak; *C. majalis*, sp. n., on which *Synergus facialis* (Hart.) is parasitic; *Spathegaster tricolor* (Hart.) on the oak; *S. flosculi* (Gir.) on the oak; and *Andricus inflator* (Hart.), chiefly on *Quercus pedunculata*.

Giraud notices the gall of *Cynips fecundatrix* (Hart.). He has obtained from this gall a new species of *Aulax* and a new *Cecidomyia*. Bull. Soc. Ent. Fr. 1868, pp. cix–cxii. Also as parasites *Megastigmus dorsalis* (Fab.), *Callimome inconstans* (Walk.), *Decatoma quercicola* (Först.).

Lucas notices some galls on a branch of *Hymenæa courbaril*, from French Guyana. Bull. Soc. Ent. Fr. 1868, pp. xxxiii, xxxiv.

Lees records that pheasants will feed on the "button-galls" of the oak-leaf produced by *Neurobius reaumurii*. Entomologist, iv. p. 28.

Aulax fecundatrix, sp. n., Giraud, Bull. Soc. Ent. Fr. 1868, p. cxi, from the artichoke-gall of *Cynips fecundatrix*.

Urocerida.

L. von Heyden describes the male of *Xyloterus fuscicornis* (Fab.), and notices the synonymy of the species and the authors who have referred to it. He proposes to name the genus *Xylœcematium*, *Xyloterus* having been employed by Erichson for a genus of Coleoptera one year before Hartig applied it to the above-mentioned species. The genus includes the following species:—*X. magus* (Fab.), *fuscicornis* (Fab.), and *columba* (Fab.)=*pennsylvanica* (De G.). (Berl. ent. Zeitschr. 1868, pp. 227–230.)

Xiphydria camelus. Frauenfeld (Verh. zool.-bot. Ges. in Wien, xviii. p. 886) describes the larva of this species, which was found to have destroyed a young birch tree.

Urocerus areolatus, sp. n., Cresson, Trans. Am. Ent. Soc. i. p. 375, New Mexico.

Sirex varipes, sp. n., Walker, Lord's Naturalist in Vancouver's Island &c. ii. p. 342, Vancouver's Island.

Tenthredinidæ.

Boisduval (Ent. Hortic. pp. 389–425) indicates the general natural history of the insects of this group, and refers especially to the habits of those species which are injurious in gardens, several of which are figured by him with their larvæ.

C. Healy publishes (Entomologist, iv. pp. 138-141) life-histories of *Phyllotoma melanopyga* and *P. tormentillæ*. Also of *P. microcephala* (Klug), *l. c.* pp. 176–178.

Nematus ventricosus. On the importation of this species into the United States and its natural history, see Walsh (Pract. Entom. i. pp. 117–125),

who also refers to other species feeding on plants of the genus *Ribes*. See also vol. ii. p. 67.

Crœsus septentrionalis. P. Inchbald notices the habits of this species. Ent. M. Mag. v. p. 21.

Inchbald describes a gall found by him on the leaves of *Salix herbacea* which is produced by a species of *Nematus*. Ent. M. Mag. v. p. 21.

Tenthredo olivacea (Klug) occurs at Rannoch in Perthshire, according to M'Lachlan, Ent. M. Mag. v. p. 44.

Giraud notices the larva of *Selandria bipunctata*. Bull. Soc. Ent. Fr. 1868, p. lv.

New species :—

Hylotoma confusa, Dietrich, Mitth. schw. ent. Gesellsch. ii. p. 353, Zurich.

Emphytus dissimilis, Dietrich, *l. c.* p. 354, and *E.* (*Harpiphorus*) *vernalis*, Dietrich, ibid., Zurich.

Allantus collaris, Dietrich, *l. c.* p. 354, Zurich.

Tenthredo orbitalis, Dietrich, *l. c.* p. 354, Zurich.

Lyda adusta, Dietrich, *l. c.* p. 355, Zurich.

LEPIDOPTERA.

A. *Works in progress.*

Berce, E. Faune Entomologique Française, Lépidoptères. Vol. I. Rhopalocères. 12mo. Paris : Deyrolle, 1867, with 18 plates.

This volume, which the Recorder has not seen, is intended to be the first of a series of manuals of French entomology. It is favourably spoken of by the editors of the Entomologist's Monthly Magazine.

Edwards, W. H. The Butterflies of North America; with coloured Drawings and Descriptions. 4to. Published by the American Entomological Society. London : Trübner & Co. Part I. April 1868.

The Recorder has not seen this work; but, from the notice given of it in the Entomologist's Monthly Magazine, it promises to be a valuable contribution to the knowledge of the Diurnal Lepidoptera of North America. The author proposes to figure and describe all the known species, giving in the letterpress their full synonymy, with notes upon their habits, times of appearance, geographical distribution, &c. The figures and descriptions are not published in systematic order; but the author proposes to give a regular classified synopsis of the species. A great part of those already published are figured for the first time.

Grote, A. R., and Robinson, C. T. A List of the Lepidoptera of North America. I. 8vo. Philadelphia, 1868, pp. 16.

This catalogue, published by the American Entomological Society, has been prepared by the authors nearly on the plan adopted by Leconte for the Coleoptera. The southern limit for the North-American area, according to the authors, is the Mexican frontier. By means of marks applied to the names, a good deal of information as to synonymy is conveyed by this list; and some further explanations are given in footnotes. The first part contains the families from the Sphingidæ to the Bombycidæ (sensu latiori).

Hewitson, W. C. Exotic Butterflies, being illustrations of new species. With coloured drawings and descriptions. Parts 65–68. 4to. London: January, April, July, and October, 1868.

——. Descriptions of one hundred new species of *Hesperidæ*. Part 2 (pp. 25–56). 8vo. London: Van Voorst. 23rd March, 1868.

Contains brief descriptions of numerous new species of Hesperiides, and characters of three new genera.

——. Descriptions of some new species of *Lycænidæ*. London: Van Voorst. 8vo, pp. 36: June 1, 1868.

By the publication of this work Hewitson seeks to secure the priority in the naming of the species here described by him, in consequence of an intimation that some other entomologist was about to describe all the new species in his possession.

B. *Separate Work.*

Butler, A. G. A Catalogue of Diurnal Lepidoptera of the family Satyridæ in the collection of the British Museum. 8vo. London, 1868, pp. 211, plates 5.

A synonymic catalogue of the Satyride Butterflies, with remarks upon some of the known species, and descriptions of new forms. The latter are figured in the five plates with which the volume is illustrated.

C. *Papers published in Journals &c.*

Andrews, W. V. The Cynthia Silkworm. American Naturalist, vol. ii. pp. 311–320.

Ballion, E. Synonymische Bemerkungen über einige Schmetterlinge. Stettiner entom. Zeitung, 1868, pp. 167–170.

Contains remarks upon Motschulsky's Catalogue of Japanese Lepidoptera (see 'Record,' 1866, p. 271).

Bates, H. W. A Catalogue of Erycinidæ, a family of Diurnal Lepidoptera. (Concluded.) Journ. Linn. Soc. Zoology, vol. ix. pp. 373–459 (February 18 and April 23, 1868).

This is the conclusion of Bates's paper referred to in last year's 'Record' (pp. 332 & 366).

Bates, H. W. Note on the genus *Pandora*. Ent. Monthly Magazine, vol. iv. pp. 169–171.

Behr, —. Ein Brief aus S. Francisco in Californien vom 3. März 1868. Stettiner entom. Zeitung, 1868, pp. 294–303.

Boisduval, —. Note sur la tribu des Cératocampides. Annales Soc. Ent. France, 4e série, tome viii. pp. 309–319.

Butler, A. G. Remarks upon the *Papilio cocytus* of Fabricius, and its distinctness from the *Adolias cocytus* of authors. Ann. & Mag. Nat. Hist. ser. 4. vol. i. pp. 70–71 : January 1868.

——. Notes on the sexes of the *Cocytus* group of the genus *Adolias*. Ibid. pp. 97–99 : February 1868.

——. Descriptions of new or little-known species of Lepidoptera. Proc. Zool. Soc. 1868, pp. 221–224, pl. 17.

——. An essay towards an arrangement of the genera of the family Satyridæ. Ent. Monthly Mag. vol. iv. pp. 193–197.

Collingwood, C. The Lepidoptera of Labuan. Entomologist, vol. iv. pp. 13–17.

Dietrich, K. Beiträge zur Kenntniss der im Kanton Zürich einheimischen Insekten. Zwanzigste und einundzwanzigste Centurie. Mittheil. schweiz. entom. Gesellsch. vol. ii. pp. 332–344.

This paper contains a list of 200 species of Lepidoptera belonging to all families inhabiting the canton of Zurich, with notices of the times and places of their occurrence. It is severely criticised by H. Frey (ibid. pp. 373–376).

Dorfmeister, Georg. Ueber die Zwitter bei den Schmetterlingen. Mittheil. naturw. Vereins für Steiermark, 1867; Stettiner entom. Zeitung, 1868, pp. 181–184.

Edwards, W. H. Descriptions of certain species of Diurnal Lepidoptera found in the United States. Trans. Amer. Ent. Soc. vol. i. pp. 286–288 : October 1867.

——. Notes on a remarkable variety of *Papilio turnus*, and descriptions of two species of Diurnal Lepidoptera. Trans. Amer. Ent. Soc. vol. ii. pp. 207–210 : September 1868.

Erschoff, N. Lepidopterologisches. Horæ Soc. Ent. Ross. tom. v. pp. 97–99.

Felder, R. Diagnosen neuer von E. Baron von Ransonnet in Vorder-Indien gesammelter Lepidopteren. Verhandl. zool.-bot. Gesellsch. in Wien, Band xviii. pp. 281–286.

Frauenfeld, G. von. Weitere Mittheilung über den Baumwollschädling Egyptens. Nach einem Bericht des Herrn Ivanovich in Cairo. Verhandl. zool.-bot. Gesellsch. in Wien, Band xviii. pp. 417–424.

——. Ueber den von Herrn Schirl erfundenen Schmetterlings-Selbstfänger. Ibid. pp. 881–884, pl. 11.

——. (See "Insecta.")

Frey, H. Die schweizerischen Microlepidopteren. Fünfte Abtheilung. Mittheil. schweiz. entom. Gesellsch. vol. ii. pp. 376–380.

A continuation of Frey's list of Swiss Microlepidoptera.

Fust, Herbert Jenner. On the Distribution of Lepidoptera in Great Britain and Ireland. Trans. Ent. Soc. London, 3rd series, vol. iv. pp. 417–517, pl. 10: February 1868.

Girard, M. (See "Insecta.")

Godman, F. D. (See Salvin, O.)

Goossens, T. Note sur les pattes membraneuses des Chenilles. Annales Soc. Ent. France, 4e sér. tome viii. pp. 745–748.

Gregson, C. S. Variation in Lepidoptera. Entomologist, vol. iv. pp. 9–13, 49–54.

A continuation of remarks noticed in 'Record,' 1867, p. 347.

Grote, A. R. On the North-American Platypteryginæ. Trans. Amer. Ent. Soc. vol. ii. pp. 65–67: July 1868.

——. On the synonymy &c. of certain species of American Lepidoptera. Ibid. pp. 115 122.

Grote, A. R., & Robinson, C. T. Descriptions of American Lepidoptera. No. 3. Trans. Amer. Ent. Soc. vol. i. pp. 323–360, plates 6 & 7: January 1868.

——, ——. Notes on the North-American Lepidoptera in the British Museum, and described by Mr. Francis Walker. Trans. Amer. Ent. Soc. vol. ii. pp. 67–88: July 1868.

This paper contains a severe criticism upon the lists of 'Heterocerous Lepidoptera' prepared by Mr. Walker for the Trustees of the British Museum.

——, ——. Descriptions of American Lepidoptera. No. 4. Ibid. pp. 179–206, plates 2 & 3: September 1868.

Guenée, Achille. New species &c. of Heterocerous Lepidoptera from Canterbury, New Zealand, collected by Mr. R. W. Fereday. Ent. Monthly Mag. vol. v. pp. 1–6, 38–43, 61–65, and 92–95: June to September 1868.

——. Le *Bombyx quercus* et ses analogues. Annales Soc. Ent. France, 4e série, tome viii. pp. 403–410.

HEALY, CHARLES. A Life-history of *Gracilaria syringella*. (Concluded.) Ent. Monthly Mag. vol. iv. pp. 175–177 and 197–199.

——. Life-history of *Chauliodus chærophyllellus*. Entomologist, vol. iv. pp. 54–59.

HELLINS, J. Notes on the earlier stages of some species of Lithosidæ. Ent. Monthly Mag. vol. v. pp. 109–114.

——. Notes on the Genus *Acidalia*, with description of the larva of *A. holosericata* &c. Ibid. pp. 95–99.

HEWITSON, W. C. Remarks on Mr. A. R. Wallace's 'Pieridæ of the Indian and Australian Regions.' Trans. Ent. Soc. Lond. 1868, pp. 97–100.

HOFMANN, OTTMAR. Beiträge zur Naturgeschichte der Tineinen. Stettiner entom. Zeitung, 1868, pp. 385–391.

HÜBER, A. Bericht über meine Lepidopteren-Ausbeute des Jahres 1867 in der Umgebung von St. Petersburg. Horæ Soc. Ent. Ross. tom. v. pp. 101–112.

KNAGGS, H. G. Notes on collecting, management, &c. (Continued.) Ent. Monthly Mag. vol. v. pp. 14–17.

In this paper Knaggs continues his instructions for the management of the caterpillars of Lepidoptera in confinement.

——. Notes on new and rare British Lepidoptera (excepting Tineina) in 1868. Entomologist's Annual, 1869, pp. 119–147.

LANG, A. M. Notes on Lepidoptera from "Goolmurg" in Cashmere. Ent. Monthly Mag. vol. v. pp. 33–37.

MAASSEN, T. Verzeichniss der Schmetterlinge, welche bei Neuenahr und Altenahr gefangen sind. Stettiner entom. Zeitung, 1868, pp. 430–449.

M'CARTER, D. B. On some Wild Silkworms of China. Journ. N. China Branch, Roy. Asiatic Soc. 1866, pp. 75–80.

MACLACHLAN, R. On the British species of Tortrices belonging to the genus *Eupœcilia* of Curtis. Entomologist's Annual, 1869, pp. 83–93.

MILLIÈRE, P. Iconographie et description de Chenilles et Lépidoptères inédits. 18e Livraison. Ann. Soc. Linn. Lyon, xv. 1868, pp. 189–235, plates 81–84.

PRITTWITZ, O. VON. Lepidopterologisches. (Fortsetzung.) Stettiner entom. Zeitung, 1868, pp. 185–200 and 244–248.

A continuation of his paper noticed in 'Record,' 1867, p. 339.

ROBINSON, C. T. (See GROTE, A. R.)

Salimbeni, Leonardo. La Farfalla corpusculosa del Baco da Seta. Annuario della Soc. dei Naturalisti in Modena, anno iii. pp. 41–56.

Salvin, O., and Godman, F. D. On some new Diurnal Lepidoptera from South America. Ann. & Mag. Nat. Hist. 4th series, vol. ii. pp. 141–152.

Schleich, —. Mikrolepidopterologische Notizen. Stettiner entom. Zeitung, 1868, pp. 392–394.

Speyer, A. Die Lepidopteren-Fauna des Fürstenthums Waldeck. Verhandl. naturh. Ver. preuss. Rheinl. und Westph. 1867, pp. 147–298.

Stainton, H. T. A few observations on the synonymy of *Tinea* (?) *alpicella* and *Zelleria saxifragæ* (n. sp.). Trans. Ent. Soc. Lond. 1868, pp. 137–139: April.

Trimen, Roland. On some undescribed species of South-African Butterflies. Trans. Ent. Soc. Lond. 1868, pp. 69–96, plates 5 & 6: April.

——. Observations on some South-African Butterflies enumerated in the "Catalogue of Diurnal Lepidoptera of the Family *Satyridæ* in the Collection of the British Museum. By Arthur Gardiner Butler, F.L.S. &c." Trans. Ent. Soc. Lond. 1868, pp. 283–288: December 1868.

Venus, C. E. Ueber das Fangen und die Behandlung der Microlepidopteren, sowie über die Zucht derselben aus Raupen. Sitzungsber. der Isis, 1867, pp. 116–126.

Wallace, Alexander. On Sericiculture. Entomologist's Annual, 1869, pp. 94–118.

Zeller, P. C. Lepidopterologische Ergebnisse einer Reise in Oberkärnthen. Stett. entom. Zeit. 1868, pp. 121–149.

——. Beiträge zur Naturgeschichte der Lepidoptern. Ibid. pp. 401–429.

——. Beitrag zur Kenntniss der Lepidoptern-Fauna der Umgegend von Raibl in Obekärnthen und Preth im angrenzenden Küstengebiet. Verhandl. zool.-bot. Gesellsch. in Wien, Band xviii. pp. 563–628.

In this paper Zeller gives a general description of the characters of the districts in which his collections were formed, and then a list of the species, with notes on their habits, modes of occurrence, varieties, &c., and descriptions of some new species of Tineidæ.

General Remarks.

Grote & Robinson have published (Trans. Amer. Ent. Soc. ii. pp. 67–88) a long and elaborate criticism of the genera and

species of North-American Lepidoptera described by Walker in the British-Museum Catalogues. Their results were obtained by a personal examination of the collection, and by the comparison of numerous specimens. They are of great value; but as they consist almost entirely of the briefest synonymic notes, it is impossible to give any abridgment of them here.

Behr furnishes (Stett. ent. Zeit. 1868, pp. 294–303) a list of the Lepidoptera observed by him in California.

Walker publishes a list of Lepidoptera captured in Vancouver's Island, in the Appendix to Lord's 'Naturalist in Vancouver's Island and British Columbia' (vol. ii. p. 335).

Girard notices (Ann. Soc. Ent. Fr. 4e sér. viii. pp. 287–289) the collections of insects sent to Paris from Canada and Nova Scotia for the Exhibition of 1867, dwelling particularly on the species which are either identical with, or very nearly related to, European forms. From Canada and Nova Scotia he records the following European species of Lepidoptera:—

Pyrameis cardui, *Vanessa morio*, slightly modified as in the Mexican form, *Orgyia antiqua*, *Leucania pallens*, *Agrotis suffusa*, *A. plecta*, *Gonoptera libatrix*, *Xylina vetusta*, *Cucullia umbratica*, *Plusia gutta* or *punctata*, *Pyralis farinalis*, *Scotosia undulata*, *S. dubitata*, *Coremia propugnata*, several *Cidariæ*, *Pieris rapæ*, and *Deilephila lineata*. Of very nearly related species, which may prove to be only local races, he cites:—*Amphidasys cognataria* (Guér.), allied to *betularia*; *Polyommatus americanus* (D'Urb.), allied to *phlæas*; *Smerinthus geminatus* (Say) and *excecratus* (Smiths.), resembling, but quite distinct from, *S. ocellatus*. In the Nova-Scotian collection were species of *Colias* and *Pieris*, nearly allied to ours; *Argynnides* very near *cuphrosyne* and *aphirape*; a *Papilio* nearly allied to *machaon*; an *Arctia* near *urticæ*; a *Catocala* like *fraxini* and *Catocala concumbens* (Walk.), allied to *pacta*. The Canadian collection contained *Chelonia americana* (Harr.), probably a modification of the yellow form of *C. caja*; *Clostera americana*, which seems to be the same as *reclusa*; *Clisiocampa sylvatica* (Harr.), allied to *neustria*; an *Acronycta*, closely approaching *psi*; *Amphipyra pyramoides* (Guér.), near to *pyramidea*; *Hibernia tiliaria* (Harr.), closely resembling *defoliaria*; *Anisopteryx restituens* (Walk.), apparently a *Cheimatobia* allied to *boreata*. Among the Canadian Butterflies very nearly allied to ours are *Grapta comma* (Harr.), *Vanessa milberti*, *j-album* and *huntera*, and *Lycæna pseudargiolus* (Boisd.). Side by side with these European forms are others of quite different type, such as species of *Danais*, *Eacles*, and *Attacus*.

Girard also notices (*l. c.* pp. 289–296) some entomological collections from Mexico exhibited at the Ministry of Public Instruction. He cites especially, as resembling European forms, *Vanessa morio*, *Pyrameis atalanta*, *cardui*, and *huntera*, and some species of Hesperides resembling *sylvanus*, *comma*, *sidæ*, and a variety of *Deiopeia pulchra*. The remainder of the species referred to by Girard are chiefly remarkable for their rarity.

Boisduval (Ent. Hortic. pp. 427–592) gives a long account of the general habits of the insects of this order, with especial reference to the species common in gardens, many of which are figured by him with their larvæ and food-plants.

Gregson has continued his researches on variation in Lepidoptera, illustrated by examples of species of Sphingidæ, Bombycidæ, Arctiidæ, and Noctuidæ (Entomologist, iv. pp. 9 & 49).

Collingwood (Entomologist, iv. pp. 13–17) notices the Lepidoptera, chiefly Rhopalocera, observed by him in Labuan.

Knaggs has published (Ent. Annual, 1869, pp. 119–147) his usual notice of the progress of the investigation of the British Lepidoptera during the past year. He records the addition of only seven species of the Lepidoptera (omitting Tineidæ).

Fust has published (Trans. Ent. Soc. Lond. 3rd ser. iv. pp. 417–517) a series of tables showing the distribution of the species of Lepidoptera (Rhopalocera to Crambi) in Great Britain and Ireland. He adopts the geographical divisions proposed by Watson in his 'Cybele Britannica,' in which Britain is divided into 18 provinces and 38 subprovinces, and adds to these 4 provinces for Ireland. These districts are shown in a coloured map (plate 10). The tables show, first, the occurrence of the species in the different provinces; second, their distribution in the subprovinces; and, third, their distribution in still larger districts, east, west, north, and south—showing also the number of subprovinces in each of these and in Scotland in which each species occurs, and the "type" to which the species belongs. These types are eight in number, and indicate no special theoretical views as to the origin of the species, but simply their predominance in particular districts, so that the type may be taken as a brief expression of the sum of the results of these tables.

Birchall communicates a list of recent additions to the Lepidopterous fauna of Ireland. Ent. M. Mag. iv. p. 283.

Birchall publishes notes on Lepidoptera observed by him near Douglas, in the Isle of Man. Entomologist, iv. pp. 109–110.

J. Boswell Syme publishes notes on Lepidoptera collected in Fifeshire. Entomologist, iv. pp. 115–117.

G. Norman publishes a list (with notes) of Lepidoptera taken in Morayshire. Entomologist, iv. pp. 169–174.

T. Blackburn publishes notes on Lepidoptera observed during an excursion to the north of Scotland. Ent. M. Mag. v. pp. 102–104.

F. Buchanan White publishes an account of Lepidoptera observed by him at Rannoch in Perthshire in 1867. Ent. M. Mag. iv. pp. 248–251.

T. Maassen publishes (Stett. ent. Zeit. 1868, pp. 430–449) a list of the Lepidoptera of the neighbourhood of Neuenahr and Altenahr.

Prittwitz (Stett. ent. Zeit. 1868, pp. 198–200 and 244–245) gives a general account of the results of his observations on Lepidoptera in the year 1867. Prittwitz also notices (*l. c.* pp. 246–248) some varieties of Moths.

A. Speyer publishes (Verh. naturh. Ver. preuss. Rheinl. und Westph. 1867, pp. 147–298) a catalogue of the Lepidopterous fauna of Waldeck, including in all 3195 species. The notices of these include statements of their local distribution within the district, descriptions of varieties, accounts of habits, and occasional notices of larvæ.

Erschoff publishes (Horæ Soc. Ent. Ross. v. pp. 97–99) a supplementary list of Lepidoptera collected by him near St. Petersburg, and indicates several changes in the nomenclature of the species cited by Sievers. (See 'Record,' 1867, p. 339.)

Erschoff indicates some Lepidoptera new to the fauna of St. Petersburg. Horæ Soc. Ent. Ross. v. pp. 166–167.

Hüber enumerates the species of Lepidoptera taken by him in the vicinity of St. Petersburg in the year 1867 (Horæ Soc. Ent. Ross. v. pp. 101–112). Several varieties are noticed; and the paper concludes with a tabular list of species captured on honey during the year, with indications of the dates of their first and last capture.

Zeller (Stett. ent. Zeit. 1868, pp. 121–125) indicates the Lepidoptera obtained by him from *Pinus mughus* in Carinthia. The species are as follows: —*Lasiocampa pini*, *Panolis piniperda*, *Macaria liturata*, *Bup. piniarius*, *Retinia pinicolana*, *resinella*, and *turionella*, *Grapholitha cosmophorana*, *Gelechia dodecella*, *Œcophora sulphurella*, *Argyresthia piniariella*, *Cedest. gysseleniella* and *farinatella*, and *Batrachedra pinicolella*. The following species were taken, but not bred, by Zeller:—*Nephopteryx abietella*, *Grapholitha pinicolana*, and *Butalis binotella*. Zeller does not find that any species are peculiar to *Pinus mughus*.

Goossens has observed that in some Lepidopterous larvæ the number of prolegs varies at different ages. Some caterpillars which had originally six prolegs, and progressed geometrically, acquired two more pairs after the third moult, and proved to belong to *Xylomyges conspicillaris*. Some young larvæ, bred from eggs found on *Chenopodium*, likewise had twelve feet, and were supposed to belong to *Plusia gamma*. After the third moult they had sixteen feet, and proved to be *Mamestra brassicæ*. He suggests that the increased number of prolegs is rendered necessary by an increased breadth of body (Ann. Soc. Ent. Fr. 4e sér. viii. pp. 745–748). Berce confirms this statement from observations on *Polia flavocincta* (Bull. Soc. Ent. Fr. 1868, p. xcvii).

J. E. Vize describes a caterpillar with compound hairs, which give it the aspect of a tuft of moss (Proc. Lit. and Phil. Soc. Manch. vi. p. 181).

A Brazilian social Caterpillar, living in companies of thirty to forty, spins a large common cocoon, according to Peckolt. Smith, Trans. Ent. Soc. Lond. 1868, p. 136.

G. Dorfmeister (Mitth. naturw. Ver. für Steiermark, 1867; Stett. ent. Zeit. 1868, pp. 181–184) remarks upon the production of so-called hermaphrodites among Lepidoptera, and puts forward as an hypothesis to account for their formation that the mixture of the sexes takes place during the development of the ovum, part of a male and part of a female germ going, according to him, to compose the germ of the hermaphrodite. Hence he infers that whenever one hermaphrodite specimen is produced in a brood there must also be another, formed from the remaining parts of the two germs. Dorfmeister suggests that this question may be settled by rearing whole broods of Lepidoptera from the egg, for which he regards *Liparis dispar* and *Gastropacha quercus* as the best species. He notices hermaphrodites of *Pontia cardamines* and *Gastropacha quercus* in his possession.

Ragonot remarks upon the fondness of many moths for the leaves of nettles, and ascribes this to the presence of a small white *Aphis* upon the

leaves, the moths probably coming in search of the sweet exudation produced by the Aphides. Ent. M. Mag. v. pp. 76–77.

Schleich publishes some notes on clearing the scales from the wings of Lepidoptera (Stett. ent. Zeit. 1868, pp. 26–27).

Frauenfeld describes and figures (Verh. zool.-bot. Ges. in Wien, xviii. pp. 881–884, pl. 11) an apparatus for capturing nocturnal Lepidoptera invented by Schirl. The apparatus consists essentially of sloping walls of net leading to narrow entrance-slits, and the attraction is furnished by a mixed fluid in process of fermentation.

Rhopalocera.

Kirby (Proc. Ent. Soc. Lond. 1868, pp. xxxiii–xxxv) gives a list of identical or representative species of Rhopalocera occurring in Europe, India, and North America. He remarks that, "wherever a European genus occurs in India or North America at all, European species, or very closely allied forms, are also to be found in those countries. South or East European species frequently extend to India, North European species frequently reach America, while Central European species extend throughout North Asia, but only in a few instances reach North America, and are there usually confined to the west coast." He adds, "almost every species common to the Old World and North America is either Polar or Californian."

W. H. Edwards has commenced the publication of an illustrated work on the Butterflies of North America (see p. 305). The first part contains a great part of the species of *Argynnis*; the second and third also contain illustrations of that genus, with species of *Colias, Apatura, Thecla,* &c.

Frauenfeld records (Verh. zool.-bot. Ges. in Wien, xviii. p. 291) 21 species of Rhopalocera collected by him in the Nicobars, one-third of which belong to the Lycænides. *Euplœa novaræ* was collected in the larval state, it changed to the pupa on the following day, and the imago emerged in seven days. Frauenfeld remarks that Lepidoptera were very abundant on the islands.

Lang publishes (Ent. M. Mag. v. pp. 33–37) a list of Butterflies captured by Jerdon in the valley of Goolmurg, 9000 feet above the level of the sea, south of the vale of Cashmere. The species are 23 in number, and include a few described as new.

Papilionides.

Parnassius citrinarius (Motsch.) probably = *stubbendorfii* (Ménétr.). Ballion, Stett. ent. Zeit. 1868, p. 167.

Butler remarks (Ent. M. Mag. v. p. 60) that *Papilio messalina* (Stoll) = *P. zenobia* (Fab.), and describes as new the species hitherto identified with the latter.

A ♀ specimen of *Papilio turnus*, exhibiting the ♂ coloration, is noticed by G. S. Mosse, Proc. Ent. Soc. Lond. 1868, p. xxxix.

Papilio turnus. Edwards (Trans. Amer. Ent. Soc. ii. p. 207) notices a remarkable form of this species, one half of which is black (*glaucus*) and the other yellow (*turnus*). The dividing line passes down the middle of the body.

Papilio duponchelii (Luc.). Lucas describes the ♂ of this species. Bull. Soc. Ent. Fr. 1868, p. v.

Trouvelot notices a peculiar habit of the larva of *Papilio turnus* (Proc. Bost. Soc. Nat. Hist. xii. p. 92).

Fettig states that, having reared two broods of *Papilio podalirius* in the same year, those of the second generation, which changed in September and October, produced reddish-yellow chrysalids, whilst the June pupæ were brownish yellow, and sometimes greenish. The second brood passed the winter in the pupa-state. He also records some observations tending to confirm the opinion that the colour of the pupa of *P. machaon* is partly dependent on that of the body to which it is attached. Bull. Soc. Ent. Fr. 1868, p. lxiii.

Papilio xeniades (Hew.) is described and figured by Hewitson (Exot. Butt. 67, July 1, 1868, *Pap.* pl. 9. fig. 26).

Papilio. Salvin and Godman (Ann. & Mag. Nat. Hist. 4th ser. ii.) describe the following new species:—*P. fenochionis, l. c.* p. 150, Mexico; *P. euterpinus* ibid., Ecuador; *P. xanthopleura, l. c.* p. 151, Eastern Peru; and *P. soratensis, l. c.* p. 152, Bolivia.

Papilio hellanichus, sp. n., Hewitson, Exot. Butt. 67, July 1, 1868, *Pap.* pl. 9. figs. 27, 28, Uruguay; *P. hypsicles,* sp. n., Hewitson, *l. c.* fig. 29, New Hebrides.

Papilio euphranor, sp. n., Trimen, Trans. Ent. Soc. Lond. 1868, p. 70, pl. 5. figs. 1, 2, Caffraria; *P. echerioides,* sp. n., Trimen, *l. c.* p. 72, pl. 6. figs. 1, 2, South Africa.

Papilio cyprœofila, sp. n., Butler, Ent. M. Mag. v. p. 60, Ashantee and Sierra Leone.

Pieridæ.

Hewitson (Trans. Ent. Soc. Lond. 1868, pp. 97–100) remarks upon the genera and species of this group, admitted by Wallace in his treatise on the 'Pieridæ of the Indian and Australian regions' (see 'Record,' 1867, p. 341). Of the genera he objects to the adoption of Wallengren's genus *Thyca* and the new genus *Tachyris* as being insufficiently characterized. Of the species he maintains that *Pieris narses=perimale* (Don.), Donovan's figure of the latter being quite recognizable; *P. nama* (Moore)=*nadina* (Luc.); *P. nesba* (Luc.) = ♀ *agostina* (Hew.); *P. ajaka* (Moore)=*melite* (Ménétr.); *P. pigea* (Boisd.) is probably an African species; *P. kalosa* (Moore)=*callidice*; *Thyca lanassa* (Boisd.) is a *Pieris,* probably=*nabis* (Luc.), which is a var. of *rachel* (Boisd.); Cramer's *P. zelmira,* E. & F., are not ♀ ♀ of *nerissa,* but have a ♂ similar to *orbona* (Boisd.); *P. neombo* (Boisd.) is not a var. of *paulina* (Cram.), its ♂ resembles *ega* (Boisd.); *P. albina* is probably not the ♂ of *paulina*; *P. melania* (Fab.) = *melania* (Don.); *Tachyris jacquinotii* (Luc.), probably = *isandra* (Boisd.); *T. nephele* (Hew.) is probably a variety of *lyncida* and *hippo*; *Prioneris sita* (Moore)= ♀ *thestylis* (Doubl.); *P. sita* (Wall.) ♂ & ♀ 2 is a distinct species, named *watsonii* by Hewitson; *P. berenice* (Luc.)=*clemanthe* (Doubl.).

Hewitson refers (Proc. Ent. Soc. Lond. 1868, p. xviii) to *Pieris jacquinotii* (Luc.), which he says is a highly coloured variety of *P. albina.*

C. G. Barrett publishes some observations on the mode of occurrence of *Colias hyale* in Britain. Ent. M. Mag. v. p. 175.

Dale remarks that he has found a larva of *Colias edusa* feeding on Melilot

in October. It changed to a pupa almost immediately, and the imago died while emerging at the end of March. Ent. M. Mag. v. p. 77.

Euterpe nigrescens, sp. n., Salvin & Godman, Ann. & Mag. Nat. Hist. 4th ser. ii. p. 149, Guatemala.

Pieris josepha, sp. n., Salvin & Godman, *l. c.* p. 150, Guatemala, Mexico, Nicaragua.

Prioneris watsonii, sp. n., Hewitson, Trans. Ent. Soc. Lond. 1868, p. 100.

Idmais tripuncta, sp. n., Butler, Proc. Zool. Soc. 1868, p. 221, pl. 17. fig. 9, India.

Heliconiides.

Ithomia. Hewitson (Exotic Butterflies, 65, Jan. 1, 1868, *Ithom.* pl. 26) describes and figures the following new species:—*I. kezia*, fig. 161, Nauta; *I. aurhiala*, fig. 162, Pebas; *I. apuleia*, fig. 163, Ecuador; *I. espriella*, fig. 164, Ecuador; *I. estella*, fig. 165, Ecuador; *I. sylvella*, fig. 166, origin not stated; *I. zitella*, fig. 167, Nauta; and *I. adelinda*, fig. 168, Ecuador.

Heliconius notabilis, Salvin & Godman, Ann. & Mag. Nat. Hist. 4th ser. ii. p. 145, Ecuador.

Acræides.

Acræa. Hewitson (*l. c.* 66, April 1, 1868, *Acræa*, pl. 6) describes and figures the following new species from Ecuador:—*A. tenebrosa*, *l. c.* fig. 33, 34; *A. abana*, *l. c.* figs. 35, 36; *A. cleasa*, *l. c.* figs. 37, 38; and *A. radiata*, *l. c.* figs. 39–41.

Acræa testacea, Salvin & Godman, Ann. & Mag. Nat. Hist. 4th ser. ii. p. 144, Bolivia.

Acræa anacreon, sp. n., Trimen, Trans. Ent. Soc. Lond. 1868, p. 77, pl. 6. figs. 3–5, Caffraria and Natal.

(*Acræa*) *Planema macarina*, sp. n., Butler, Proc. Zool. Soc. 1868, p. 221, pl. 17. fig. 6, Gold Coast.

Nymphalides.

Butler notices (Ann. & Mag. N. H. ser. 4. i. p. 70) that the *Adolias cocytus* of modern authors is distinct from *Papilio cocytus* (Fab.). He describes it as a new species, under the name of *A. lepidea* (*vide infrà*).

Butler also remarks (*l. c.* pp. 97–98) that the supposed species of the *cocytus* and *ambalika* groups of *Adolias* are respectively males and females of the same species, thus:—*A. cocytus* (Fab.) is ♂ of *A. yopia*? var. (Moore) ♀; *A. blumei* (Voll.) ♂ = *A.* (*ambalika*, var. Moore) ♀; *A. puseda* (Moore) ♂ = *A. cocyta* (Fab. Mant.) ♀. The ♂ ♂ of *A. ambalika* and *diardi* are described, and both sexes of *A. blumei* and *cocytina* (*l. c.* pp. 98–99).

Pandora. Bates (Ent. M. Mag. iv. pp. 169–171) indicates the characters, habits, and distribution of the insects of this genus, and describes the species belonging to it, including one new species.

Catagramma. Hewitson figures varieties of *C. humboldtii* (Exot. Butt. 68, *Catagr.* pl. 11. figs. 82, 83), *C. euriclea* (*l. c.* pl. 12. figs. 90, 91), and *C. felderi* (*l. c.* fig. 96).

Diadema eurytus (Clerck). Hewitson (Exot. Butt. 66, April 1, 1868, *Diadema*, pl. 4. figs. 8–11) describes and figures the two sexes of this species.

Eresia claudina. Hewitson (*l. c.* 66, *Eresia*, pl. 7. figs. 52, 53) figures a variety of this species.

Zeuxidia aurelius (Cram.) is figured and described by Hewitson (Exot. Butt. 67, July 1, 1868, *Zeux.* and *Æmona*, pl. 1. figs. 1, 2).

Edwards describes and figures the ♂ of his *Limenitis proserpina*. Trans. Amer. Ent. Soc. i. p. 286, pl. 5.

Fallou notices two extreme (dark and pale) varieties of *Melitæa athalia*, captured in the same locality within two days of each other. Bull. Soc. Ent. Fr. 1868, p. lxxxv. P. Mabille maintains that difference of locality and soil are the main causes of such variations. Ibid. p. lxxxvi.

Birchall calls attention to the prevalence of very diminutive specimens of *Vanessa urticæ* in the Isle of Man. Proc. Ent. Soc. Lond. 1868, p. xxxviii.

Morpheis ehrenbergii (Doubl.) is said by Boucard to be sociable throughout the larval stage, and even to change to the pupa-state in great companies together. Girard, Ann. Soc. Ent. Fr. 4e sér. viii. p. 294.

M'Coy (Ann. & Mag. N. H. ser. 4. i. p. 76) remarks upon certain characters separating the European from the supposed Australian form of *Cynthia cardui*, and gives to the latter the name of *C. kershawi*.

The larva and pupa of *Melitæa phaëton* are figured in Amer. Natural. ii. p. 220.

New species :—

Cirrhochroa johannes, Butler, Proc. Zool. Soc. 1868, p. 221, pl. 17. fig. 10, Malacca.

Euryphene swanzyana, Butler, *l. c.* p. 222, pl. 17. figs. 7, 8, Gold Coast.

Argynnis jerdoni, Lang, Ent. M. Mag. v. p. 34, Goolmurg.

Melitæa marcia, Edwards, Trans. Amer. Ent. Soc. ii. p. 207, New York to Louisiana.

Encides lineata, Salvin & Godman, Ann. & Mag. Nat. Hist. 4th ser. ii. p. 145, Guatemala.

Eresia. Hewitson (Exot. Butt. 66, April 1, 1868, *Eresia*, pl. 7) describes and figures the following new species :—*E. claphicea*, *l. c.* figs. 50, 51, *E. etia*, *l. c.* figs. 56, 57, and *E. flavida*, *l. c.* fig. 61, from Ecuador ; *E. clada*, *l. c.* figs. 54, 55, Mexico ; *E. esba*, *l. c.* fig. 60, New Granada ; and *E. angusta*, *l. c.* figs. 58, 59, origin not stated.

Eresia mœsta, Salvin & Godman, *l. c.* p. 145, Ecuador ; *E. phædima*, Salv. & Godm. *l. c.* p. 146, Peru.

Callicore eupepla, Salvin & Godman, *l. c.* p. 147, Costa Rica ; *C. phlogea*, Salv. & Godm. ibid., Bogotá.

Batesia hypoxantha, Salvin & Godman, *l. c.* p. 147, Upper Amazon ; *B. hemichrysa*, Salv. & Godm. ibid., Ecuador.

Paphia cyanea, Salvin & Godman, *l. c.* p. 148, Ecuador ; *P. tyrianthina*, Salv. & Godm. ibid., Bolivia.

Cynthia kershawi, M'Coy, Ann. & Mag. N. H. ser. 4. i. p. 76, South Australia.

Catagramma. Hewitson (Exot. Butt. 68, Oct. 1, 1868, *Catagr.* pls. 11 & 12) describes and figures the following new species of this genus :—*C. xanthica*, *l. c.* pl. 11. figs. 75, 76, Pozzuzo ; *C. comnena*, *l. c.* figs. 77, 78, and *C. morona*, *l. c.* pl. 12. figs. 93, 94, Apolobamba ; *C. clælia*, *l. c.* pl. 11. figs. 79, 80, Napo ; *C. lucrezia*, *l. c.* fig. 81, New Granada ; *C. nyctimene*, *l. c.* figs. 84, 85, *C. alicia*, *l. c.* pl. 12. figs. 86, 87, and *C. lanice*, *l. c.* fig. 92, Ecuador ; *C. volara*, *l. c.* figs. 88, 89, Venezuela ; and *C. lepta*, *l. c.* fig. 95, Amazons.

Neptis. Hewitson describes the following new species (Exot. Butt. 68, Oct. 1, 1868, *Neptis*, pl. 1):—*N. nemetes*, *l. c.* figs. 1, 2, Sierra Leone; *N. nysiades*, *l. c.* figs. 3, 4, Old Calabar; *N. nitetis*, *l. c.* fig. 5, Philippines; *N. neriphus*, *l. c.* figs. 6, 7, Sula. Also *N. narthesis* for *Pantoporia frobenia* (Hübn. Zutr.), from Java, which is distinct from the Madagascar species.

Adolias lepidea, Butler, Ann. & Mag. N. H. ser. 4. i. p. 71 (=*cocytus*, Doubld., Westw. *nec* Fab.), India.

Pandora dibalis, Bates, Ent. M. Mag. iv. p. 171, Amazons.

Panopea tarquinia, Trimen, Trans. Ent. Soc. Lond. 1868, p. 79, pl. 5. fig. 3, Natal.

Satyrides.

Trimen publishes some remarks on species of this group described or referred to by Butler in his Catalogue (Trans. Ent. Soc. Lond. 1868, pp. 283–288). He confirms the specific rank of *Leptoneura cassina* (Butl.), and expresses doubts whether *Pseudonympha trimenii* (Butl.) is distinct from *P. sabacus* (Trim.), as he has met with what seem to be intermediate forms, and whether his *Debis dendrophilus*, of which he notices a striking variety, can be properly referred to the genus *Neope*; he remarks on the synonymy of some species of *Mycalesis* (*M. eusirus* and *evenus*, Hopff., and *caffra* and *injusta*, Wallengr.), and states that there is no ground for regarding *Yphthima lisandra* as a South-African species.

Butler proposes a new systematic arrangement of the genera of this group, founded chiefly on peculiarities in the discoidal cell of the hind wings. He admits 71 genera, which he arranges under 11 sections. A list of the genera, with indications of the type species in each, is given. Ent. M. Mag. iv. pp. 193–197.

Crenis amulia (Cram.) is figured by Butler, Proc. Zool. Soc. 1868, pl. 17. figs. 3, 4.

Pronophila. Hewitson (Exot. Butt. 65, Jan. 1, 1868, *Pron.* pl. 4) figures the following previously described species:—*P. patrobas*, fig. 20; *P. phœsana*, fig. 23; *P. phœa*, var., fig. 26; and *P. paneis*, var., fig. 27.

Lasiommata marginalis (Motsch.) and *L. maackii* (Brem.). Motschulsky cites the latter species as a synonym of his *L. marginalis*. Ballion quotes the diagnoses of the two species with the object of showing their distinctness (Stett. ent. Zeit. 1868, pp. 167, 168).

Erebia. Zeller (Stett. ent. Zeit. 1868, pp. 127–130) indicates the species of this genus observed by him in Carinthia, in the order of their appearance, as follows:—in the valley of Raibl, *nerine* and *psodea*, *ligea*, *euryale*, *pronoë*, *medea*; on the mountains, *manto*, *tyndarus*, and *pharte*. He notices the habits of the species.

Cœnonympha arcania and *satyrion.* Zeller notices the characters and habits of the insects of these species observed by him in Carinthia (Stett. ent. Zeit. 1868, pp. 130–131).

Satyrus semele. E. Hopley records the capture of an hermaphrodite of this species (right side ♂, left ♀). Ent. M. Mag. v. p. 105.—A gynandromorphous specimen of *Satyrus semele* (left side ♀, right ♂) is described by Garrett, Entomologist, iv. p. 132.

Satyrus hyperanthus. A variety without wings noticed by A. Pitman, Entomologist, iv. p. 18.

Argynnis euphrosyne. Buckler describes the transformations of this species. Ent. M. Mag. v. pp. 125–127.

Hipio (*Cyllo*) *crameri* (Butl.) is figured by Butler, Cat. Satyr. pl. 5. fig. 1.

New genera and species:—

Æmona, g. n., Hewitson, Exot. Butt. 67, July 1, 1868. Head small; eyes naked; palpi long, hairy within near eyes; antennæ short; body small, short; fore wings acutely pointed, costal nearly reaching apex, subcostal with 4 branches, one before end of cell and three near apex, cell short, closed, discocellulars 1 and 2 short, 3 long; hind wing with cell open. Sp. *Clerome amathusia* (Hew.), *l. c. Zeux.* and *Æmona*, pl. 1. figs. 3, 4.

Paramecera, g. n., Butler, Cat. Satyr. p. 98, and Ent. M. Mag. iv. p. 194. Allied to *Heteronympha*. Sp. *Neonympha xieaque* (Reakirt), pl. 2. fig. 5.

Callitæra, g. n., Butler, *l. c.* p. 101. Allied to *Heteronympha*. Sp. *Pap. menander* (Drury), *Hetæra aurora* (Butl.), *H. esmeralda* (Doubl.), *H. harpalyce* (Butl.), *Pap. andromeda* (Fab.).

Anchiphlebia, g. n., Butler, *l. c.* p. 106, pl. 5. fig. 3 (neuration). Allied to *Antirrhæa*. Sp. *Ant. archæa* (Hübn.), *A. hela* (Feld.); *Anch. taygetina*, sp. n., Butler, *l. c.* p. 107, pl. 5. fig. 2, Ega.

Melanitis gnophodes, Butler, Cat. Satyr. p. 5, pl. 2. fig. 1, India.

Gnophodes morpena (Westw. MS.), Butler, *l. c.* p. 7, Congo, Ashantee.

Taygetis. Butler describes the following new species of this genus:—*T. excavata*, *l. c.* p. 8, pl. 1. fig. 1, Honduras; *T. armillata*, ibid., pl. 1. fig. 3, Bogotá, Bolivia; *T. nympha*, *l. c.* p. 9, pl. 1. fig. 7, Honduras; *T. nymphosa*, *l. c.* p. 10, pl. 1. fig. 6, Bolivia; *T. crubescens*, ibid., pl. 1. fig. 2, Bogotá; *T. euptychidia*, *l. c.* p. 13, pl. 1. fig. 5, Pará, Brazil.

Euptychia perfuscata, Butler, *l. c.* p. 18, Pará; *E. rustica*, Butler, *l. c.* p. 32, pl. 1. fig. 4, Bolivia.

Cœnonympha marginalis, Butler, *l. c.* p. 42, pl. 5. fig. 4, Algeria.

Callitæra pyropina, Salvin & Godman, Ann. & Mag. Nat. Hist. 4th ser. ii. p. 141, East Peru.

Pierella rubecula, Salvin & Godman, *l. c.* p. 142, Guatemala; *P. ocreata*, Salv. & Godm. *l. c.* p. 143, Panama, Veragua.

Hetæra pallida, Salvin & Godman, *l. c.* p. 142 (=*H. luna*, Hew. *nec* Fab.), Nicaragua.

Antirrhæa pterocopha, Salvin & Godman, *l. c.* p. 143, Veragua.

Oressinoma sorata, Salvin & Godman, *l. c.* p. 144, Bolivia.

Epinephele neoza, Lang, Ent. M. Mag. v. p. 35, *E. goolmurga*, Lang, *l. c.* p. 36, and *E. maiza*, Lang, ibid., Goolmurg.

Epinephele pallescens, Butler, *l. c.* p. 65, pl. 3. fig. 3, Persia.

Leptoneura cassina, Butler, *l. c.* p. 72, pl. 2. fig. 12, South Africa.

Erebia epipsodea, Butler, *l. c.* p. 80, pl. 2. fig. 9, Rocky Mountains; *E. hispania*, Butler, *l. c.* p. 86, pl. 2. fig. 7, Spain; *E. mantoides*, Butler, *l. c.* p. 87, pl. 2. fig. 6, Lapland; and *E. faseiata*, Butler, *l. c.* p. 92, pl. 2. fig. 8, Arctic America.

Tetraphlebia? *plumbeola*, Butler, *l. c.* p. 95, pl. 2. fig. 11, Port Famine.

Lethe arcuata, Butler, *l. c.* p. 114, pl. 2. fig. 3 (=*arete*, Cram.), Celebes.

Mycalesis. Butler describes the following new species of this genus:—*M. saga*, *l. c.* p. 130, pl. 3. fig. 1, *M. vulgaris*, ibid., pl. 3. fig. 2, and *M. angulosa*, ibid.,

pl. 3. fig. 8, Sierra Leone; *M. auricruda*, *l. c.* p. 131, pl. 3. fig. 6, Ashantee; *M. malsarida*, *l. c.* p. 134, pl. 3. fig. 14, Silhet; *M. justinella*, *l. c.* p. 135, pl. 3. fig. 12, and *M. semperi*, *l. c.* p. 137, pl. 3. fig. 7, Philippine Islands; *M. madjicosa*, ibid., pl. 3. fig. 10, Madjico-Sima; *M. mandosa*, *l. c.* p. 139, pl. 3. fig. 9, South India; *M. æthiops*, *l. c.* p. 141, pl. 3. fig. 11, New Guinea; *M. felderi*, *l. c.* p. 144, pl. 3. fig. 5, Philippine Islands; *M. fraterna*, *l. c.* p. 145, pl. 3. fig. 13, Madagascar; and *M. junonia*, *l. c.* p. 146, pl. 3. fig. 4, South India.

Erites elegans, Butler, *l. c.* p. 147, pl. 2. fig. 4, and *E. argentina*, Butler, *l. c.* p. 188, pl. 5. fig. 8, Borneo.

Argyrophorus williamsianus (White), Butler, *l. c.* p. 159, pl. 4. fig. 1, Port Famine.

Œneis gigas, Butler, *l. c.* p. 161, pl. 2. fig. 2, Vancouver's Island; *Œ. assimilis*, Butler, *l. c.* p. 163, pl. 2. fig. 10, Repulse Bay.

Hypocysta antirius, Butler, *l. c.* p. 168, pl. 4. fig. 9, Moreton Bay.

Lymanopoda ferruginosa, Butler, *l. c.* p. 169, pl. 4. fig. 3, *L. venosa*, Butler, *l. c.* p. 171, pl. 4. fig. 5, and *L. acræida*, Butler, ibid., pl. 4. fig. 6, Bolivia.

Steroma superba, Butler, *l. c.* p. 172, pl. 5. fig. 7, Bolivia.

Pedaliodes granulata, Butler, *l. c.* p. 173, pl. 4. fig. 8 (=? *Pron. perperna*, Feld.), Bogotá; *P. angularis*, Butler, *l. c.* p. 176, pl. 4. fig. 7, Peru.

Oxeoschistus simplex, Butler, *l. c.* p. 180, pl. 4. fig. 2, Columbia.

Lasiophila orbifera, Butler, *l. c.* p. 182, pl. 5. fig. 6, Bolivia, Bogota, Amazons; *L. hewitsonia*, Butler, *l. c.* p. 182, pl. 4. fig. 4, Bolivia.

Pronophila. Hewitson (Exot. Butt. 65, Jan. 1, 1868, *Pron.* pls. 3 & 4) describes and figures the following new species of this genus from Ecuador:—*P. phalæsia*, *l. c.* pl. 3. figs. 13–14 (= ♂ *P. prosymna*, Hew. *olim*); *P. phœnicusa*, *l. c.* figs. 18, 19; *P. phyllalia*, *l. c.* pl. 4. figs. 21, 22; *P. pedacia*, *l. c.* fig. 24; and *P. perita*, *l. c.* fig. 25. Also *P. philotera*, *l. c.* pl. 3. figs. 16, 17, origin not stated.—*Pronophila obscura*, Butler, *l. c.* p. 184, pl. 4. fig. 10, Venezuela.

Yphthima singala, R. Felder, Verh. zool.-bot. Ges. in Wien, xviii. p. 283, Ceylon.

Corades argentata, Butler, *l. c.* p. 186 (=? *C. pannonia* ♀, Hew.), Bolivia.

Erycinides.

Bates has completed his catalogue of the known species of this subfamily (Journ. Linn. Soc. Zool. ix. pp. 373–459). He characterizes the genus *Bœotis* (Hübn.), and refers to it *Pap. hisbon* (Cram.) and three new species (*l. c.* pp. 395–396), and also notices the characters of *Euerycina* (Saund.) and its affinity to *Lemonias* (*l. c.* p. 402).

New genera and species :—

Zelotæa, g. n., Bates, Journ. Linn. Soc. Zool. ix. p. 381. Allied to *Helicopis*; fore wings short and broad, subcostal terminating at apex, 3-branched, upper radial joining subcostal far from apex of cell. Sp. *Z. phasma*, Bates, *l. c.* p. 382, Ega; *Z. dubia*, Bates, ibid., Pará; and *Z. achroa*, Bates, ibid., Tapajos.

Dysmathia, g. n., Bates, *l. c.* p. 382. Allied to preceding; upper radial from end of cell. Sp. *Pandemos areuta* (Doubl.); new sp. *D. postia*, Bates, *l. c.* p. 383, Pará, and *D. costalis*, Bates, ibid., Ega.

Pachythone, g. n., Bates, *l. c.* p. 389. Allied to *Mesene*; thorax and abdomen much stouter; antennæ abbreviated and thickly clubbed. New sp. *P. erebia*, Bates, *l. c.* p. 390, *P. xanthe*, Bates, *l. c.* p. 391, Ega; *P. lateritia*, Bates, *l. c.* p. 390, Tapajos and Ega; *P. distigma*, Bates, ibid., Pará; and *P. mimula*, Bates, *l. c.* p. 391, Santarem.

Lasaia, g. n., Bates, *l. c.* p. 397. Allied to *Charis* and *Calydna*; eyes hairy; palpi with slender tips projecting beyond forehead. Sp. *Pap. meris* (Cram.) and *Charis cleadas* (Hew.).

Catagrammina, g. n., Bates, *l. c.* p. 411. Allied to *Thecope*; ♂ resembling *Catagramma*, ♀ resembling *Aricoris*; palpi very slender, apical joint projecting in ♂, apical and part of penultimate in ♀; antennal club distinct, gradually formed, shaft unicolorous in ♂, spotted beneath at base in ♀; tarsi without spines beneath in ♂, spined in ♀. Sp. *Necyria tapaja* (Saund.).

Uraneis, g. n., Bates, *l. c.* p. 411. Allied to *Tharops*; wings and palpi much longer in ♀ than in ♂. Sp. *Tharops hyalina* (Butl.).

Mesosemia. Bates (Journ. Linn. Soc. Zool. ix.) describes the following new species of this genus:—*M. olivencia*, p. 373, Upper Amazons; *M. lætifica* *, p. 373, Pará; *M. egabella* *, p. 374, Ega; *M. calypso*, p. 374, Ega.

Eurygona. Bates describes (*l. c.*) the following new species of this genus:—*E. coccinella*, p. 374, *E. erythræa*, *calligramma*, and *charilis*, p. 375, *E. angulata*, *mirania*, and *ferrugo*, p. 376, and *E. extensa*, p. 377, from the Upper Amazons; *E. modesta*, p. 376, and *E. violetta*, p. 378, from the Tapajos; and *E. clithra*, p. 377, Pará and Maranham.

Eurygona aurantiaca, Salvin & Godman, Ann. Mag. Nat. Hist, 4th ser. ii. p. 149, and *E. hieronymi*, Salv. & Godm. ibid., San Geronimo, Vera Paz.

Themone pœcila, Bates, *l. c.* p. 378, Ega.

Chamælimnas iæris, Bates, *l. c.* p. 378, Ega; *C. briola*, Bates, *l. c.* p. 379, Ucayali.

Syrmatia lamia, Bates, *l. c.* p. 379, Ega.

Pheles rufotincta, Bates, *l. c.* p. 379, Ega.

Orestia tapajona, Bates, *l. c.* p. 381, Tapajos.

Esthemopsis celina, Bates, *l. c.* p. 379, Ega; *E. æolia*, Bates, *l. c.* p. 380, Tapajos; and *E. lithosina*, Bates, ibid., Tunantins.

Limnas flammula, Bates, *l. c.* p. 380, Ega; *L. semiota*, Bates, ibid., Tapajos.

Zeonia sylphina, Bates, *l. c.* p. 383, Ecuador.

Siseme xanthogramma, Bates, *l. c.* p. 384, East Peru; *S. sprucei*, Bates, ibid., Chimborazo; and *S. caudalis*, Bates, ibid., Peru.

Erycina miniola, Bates, *l. c.* p. 384, Ega.

Emesis spreta and *hypochloris*, Bates, *l. c.* p. 385, Ega; *E. æthalia*, Bates, ibid., New Granada.

Cricosoma eraste, Bates, *l. c.* p. 385, Ega; *C. phædra*, Bates, *l. c.* p. 386, Tapajos.

Mesene. Of this genus Bates (*l. c.*) describes the following new species:—*M. sophistes*, p. 386, and *M. leucophrys*, p. 387, from the Upper and Lower Amazons; *M. fuliginea*, p. 386, Villa Nova; *M. pyrsodes*, ibid., *M. fenes-*

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* These two species are referred to as "distinct forms" of *M. philocles* (Linn.).

trella, p. 387, and *M. nydia* and *pyrrha*, p. 389, Ega; *M. paraena*, *simplex*, and *celetes*, p. 387, and *M. basilissa*, p. 388, Pará; *M. debilis* and *apolecta*, p. 388, Tapajos; *M. crocostigma*, ibid., Tunantins; and *M. eupteryx*, p. 389, Pará and Tapajos.

Charis. Bates (*l. c.*) describes the following new species of this genus:—*C. monogramma*, p. 391, Santarem; *C. lypera* and *argyrea*, p. 392, and *C. glaucopis*, p. 393, Ega; *C. venilia*, p. 393, Pará and Tapajos; and *C. zama*, p. 392, Amazons generally.

Symmachia amazonica, Bates, *l. c.* p. 393, Ega.

Calydna argiella, Bates, *l. c.* p. 394, Brazil; *C. tinea*, Bates, ibid., Pará; *C. maculosa*, Bates, ibid., S. Paulo; and *C. micra*, Bates, *l. c.* p. 395, Tapajos and Villa Nova.

Bœotis euprepes, Bates, *l. c.* p. 396, Tapajos; *B. prima*, Bates, ibid., Tapajos and Ega.

Metacharis cuparina, *M. nigrella*, and *M. (Echenais) exigua*, Bates, *l. c.* p. 396, Tapajos.

Tharops superba, Bates, *l. c.* p. 397, Villa Nova.

Lemonias. Bates (*l. c.*) describes the following new species of this genus:—*L. melia*, p. 397, *L. campestris*, ibid., and *L. galena*, p. 398, Amazons generally (the last also in Cayenne); *L. pione*, p. 398, and *L. hemileuca*, p. 399, Pará; *L. apotheta*, p. 399, Brazil; and *L. lampros*, ibid., Ega and S. Paulo.

Nymphidium. The following new species of this genus are described by Bates (*l. c.*):—*N. ochra*, p. 399, and *N. heliotis*, p. 402, Upper Amazons; *N. fulminans*, p. 400, Tapajos and Villa Nova; *N. chimborazium*, p. 400, Chimborazo; *N. rubigo*, p. 401, Tapajos; *N. mesoleucum*, ibid., New Granada; and *N. eutrapela*, ibid., Amazons generally.

Aricoris gelasine, Bates, *l. c.* p. 402, and *A. velutina*, Bates, *l. c.* p. 403, Upper Amazons; *A. disparilis*, Bates, *l. c.* p. 403, and *A. butleri*, Bates, *l. c.* p. 459, Tapajos; and *A. flammula*, Bates, *l. c.* p. 404, Tapajos and Ega.

Theope. Of this genus Bates (*l. c.*) describes the following new species:—*T. sericea*, p. 404, and *T. nobilis*, p. 410, Pará and Tapajos; *T. lampropteryx*, p. 404, *T. hypoleuca*, p. 406, *T. methemona*, p. 408, and *T. eurygonina*, p. 410, Santarem; *T. hypoxanthe*, p. 405, and *T. simplicia*, p. 406, Pará; *T. sobrina*, p. 405, *T. tetrastigma*, p. 408, Tapajos; *T. apheles*, *zostera*, and *aureonitens*, p. 405, *T. excelsa* and *azurea*, p. 406, *T. atima*, p. 407, and *T. drepana*, p. 409, Upper Amazons; *T. lycœnina*, p. 406, *T. foliarum*, p. 407, *T. leucanthe*, p. 408, and *T. syngenes*, p. 409, Pará and Santarem; *T. punctipennis*, p. 407, Tapajos and Ega; and *T. discus*, p. 409, Pará and Upper Amazons.

Lycœnides.

Thecla falacer (God.) = *T. calanus* (Hübn.) according to Grote and Robinson, who state further that *T. falacer* (Boisd. and Lec.) is described from the latter, whilst the figure represents their *T. inorata*. Harris's *T. falacer* probably included also *T. acadica* (Edw.).

Zeritis thysbe (Linn.). An aberrant form of this species is figured by Butler, Proc. Zool. Soc. 1868, pl. 17. fig. 5.

Lucas describes a case of hermaphroditism in *Lycœna alexis*. Ann. Soc. Ent. Fr. 4e sér. viii. p. 744.—A gynandromorphous specimen of *Lycœna alexis* (right side ♂, left ♀) is described by J. Thorpe, Entomologist, iv. p. 132.

Lycæna ægon. Zeller (Stett. ent. Zeit. 1868, pp. 125–127) remarks on the characters and habits of this species as observed by him in Carinthia.

Lycæna medon (=*agestis*) and *artaxerxes.* Zeller (Stett. ent. Zeit. 1868, pp. 401–405) discusses the characters of these insects, especially those furnished by their larvæ, and inclines to the opinion that they are distinct species.

The larva of *Lycæna artaxerxes* is described by Buckler, Ent. M. Mag. v. p. 176.

Zeller (Verh. zool.-bot. Ges. in Wien, xviii. p. 571–572) notices the habits of *Thecla spini* and *T. rubi*, especially as regards the food of the larvæ. He also describes a variety of *Polyommatus dorilis* taken near Raibl, and notices several other species of this subfamily.

Chrysophanus americanus. According to C. S. Minot there are 3 broods of this species in the year—in May, July, and August (Proc. Bost. Soc. Nat. Hist. xii. p. 98).

New species :—

Delonura, g. n., Trimen, Trans. Ent. Soc. Lond. 1868, p. 81. Allied to *Eumenia*; antennæ curved outwards at extremity; palpi naked, ascendant, joint 2 much swollen, last joint slender, acute; fore wing with 5 subcostal nervules, discoidal nervules having a common origin; closing nervule of discoidal cell in hind wing meeting first and second median nervules at their common origin. Sp. *D. immaculata*, sp. n., Trimen, *l. c.* p. 83, pl. 5. fig. 4, Caffraria.

Zeritis sardonyx, Trimen, *l. c.* p. 83, pl. 5. fig. 5, and pl. 6. figs. 6, 7, Cape Colony; *Z. chrysantas*, Trimen, *l. c.* p. 85, pl. 5. fig. 6, Cape Colony; *Z. lyncurium*, Trimen, *l. c.* p. 86, Caffraria.

Aphnæus caffer, Trimen, *l. c.* p. 88 (=*natalensis*, Hew. nec Doubl.), Natal.

Lycænesthes lycænina, R. Felder, Verh. zool.-bot. Ges. in Wien, xviii. p. 281, Ceylon.

Lycæna singalensis, R. Felder, *l. c.* p. 282, and *L. noreia*, R. Felder, ibid., Ceylon.

Lycæna barberæ, Trimen, *l. c.* p. 89, pl. 5. fig. 7, *L. otacilia*, Trimen, *l. c.* p. 90, *L. tsomo*, Trimen, *l. c.* p. 91, and *L. notoba*, Trimen, *l. c.* p. 91, from the Cape Colony.

Thecla. Hewitson (Descriptions of New Species of *Lycænidæ*) describes 76 new species of this genus.

Thecla inornata, Grote and Robinson, Trans. Amer. Ent. Soc. i. p. 323 (=*falacer*, Boisd. and Lec. nec God.), Atlantic States.—*Thecla juanita*, Scudder, Proc. Bost. Soc. N. H. xi. p. 435, Florida.—*Thecla souhegan*, C. P. Whitney, Proc. Bost. Soc. Nat. Hist. xii. p. 162, Milford, New Haven.—*Thecla ontario*, Edwards, Trans. Amer. Ent. Soc. ii. p. 209, Ontario.

Hesperiides.

Hesperia (*Ismene*) *aria* (Moore) is figured by Hewitson (Exot. Butt. 67, 1 July, 1868, *Hesp.* pl. 3. figs. 24, 25), and also *H.* (*I.*) *druna* (Moore), the form described by Moore as *I. sasivama* (*l. c.* fig. 26).

Hesperia nemoris (Edw.)=*samoset* (Scudd.) and *H. rurea* (Edw.)=*metacomet* (Harr.), according to Edwards (Trans. Amer. Ent. Soc. i. p. 288). Edwards also states that his description and figures of *H. logan* are from the ♂ instead of the ♀ (ibid.).

Prittwitz (Stett. ent. Zeit. 1868, pp. 189–198) remarks upon various species, namely:—*charybdis* (Westw.)=*zeleucus* (Fab.); *cleanthes* (Latr.); *euricles* (Latr.)=*dorantes* (Hübn.)= ? *longicauda* (Sepp); *creteus* (Cram.); *fulgurator* (Cram.)=*mercatus* (Fab.); *savigny* (Latr.)=*lividus* (Hübn.); *exadens* (Cram.)=*pseudexadens* (Westw.)=*Epargyres socus* (Hübn.); *salius* (Cram.); *dalmanni* (God.); *bifasciatus* (Brem.); *lafrenayi* (God.); *vulpinus* (Hübn.); *jovianus* (Cram.)= ? *pseudojovianus* (Westw.); *syrichtus* (Fab.); *æpitus* (Hübn.), not = *epitus* (God.); *phocion* (God.); *melius* (Hübn.); *austera* (H.-Sch.); *begga* (H.-Sch.); *bigutta* (H.-Sch.); *ménétriesii* (God.).

Pamphila sylvanus. The mode of oviposition of this species is described by H. Ullyett. Ent. M. Mag. v. p. 129.

Zeller (Verh. zool.-bot. Ges. in Wien, xviii. p. 574) notices the early occurrence of *Syrichthus alveus* on the mountains of Carinthia, near Raibl.

New genera and species:—

Hesperilla, g. n., Hewitson, Descr. New Hesp. p. 37. Allied to *Hesperia*, but the antennæ of moderate length, slightly curved, spotted with white, and the club long and curved, as in *Eudamus*. Type *P. ornata* (Leach). New sp. *H. halyzia*, Hew. *l. c.* p. 38, Port Denison; *H. dirphia*, Hew. ibid., Swan River; *H. donnysa*, Hew. *l. c.* p. 39, Moreton Bay; and *H. doclea*, Hew. ibid., Moreton Bay.

Æthilla, g. n., Hewitson, Descr. New Hesp. p. 55. Allied to *Erycides*; head large; body robust; joint 3 of palpi short; antennal club slightly thicker at the bend, tapering to a fine point; fore wings much pointed, cell long and narrow, branches from median vein equidistant; cell of hind wing half length of wing, closed in a straight line from 3rd median venule; hind legs with 4 spurs, and a tuft of long hair from base of tibiæ. Sp. *Æ. eleusinia*, sp. n., Hew. *l. c.* p. 55, Quito.

Cæcina, g. n., Hewitson, *l. c.* p. 55.—Allied to *Eudamus*; head small; palpi with last joint slightly projecting beyond the hair of the lower part; antennæ slender, club slender, long, and pointed; body short; fore wing with inner margin projecting near base, covering a tuft of hair on hind wing, cell long, narrow, obliquely closed; cell of posterior wing closed in a straight line from base of second median vein. Sp. *C. calathana*, sp. n., Hew. *l. c.* p. 56, New Granada; *C. compusa*, sp. n., Hew. ibid., Amazons.

Eudamus spilothyrus, R. Felder, Verh. zool.-bot. Ges. in Wien, xviii. p. 283, Neilgherries; *E. infernus*, R. Felder, ibid., Ceylon.

Hesperia egena, R. Felder, *l. c.* p. 284, Ceylon.

Hesperia lebadea, Hewitson, Exot. Butt. 67, 1 July, 1868, *Hesp.* pl. 3. figs. 22, 23, Borneo; *H. triacellia*, Hewitson, *l. c.* fig. 27, Aru Islands; and *H. laufella*, Hewitson, *l. c.* figs. 28–30, Old Calabar.

Hesperia pilatka, Edwards, Trans. Amer. Ent. Soc. i. p. 287, Florida; *H. nortonii*, Edwards, ibid., New Orleans; *H. osyka*, Edwards, *l. c.* p. 288, New Orleans.—*Hesperia waco*, Edwards, *l. c.* ii. p. 122, Texas.

Hesperia. Hewitson (Descriptions of New Hesperidæ) describes the following new species of this genus:—*H. cynaxa*, *l. c.* p. 25, Mexico; *H. immaculata*, ibid., Columbia; *H. marperia*, *l. c.* p. 26, Amazons; *H. himella*, ibid., Rio de Janeiro; *H. artona*, *l. c.* p. 27, Rio de Janeiro; *H. dolopia*, ibid., North India; *H. laurea*, *l. c.* p. 28, Rio de Janeiro and Cayenne; *H. physcoa*, ibid., origin not stated; *H. homolea*, *H. bononia*, and *H. anthea*, *l. c.* p. 29,

Singapore; *H. fusina*, *l. c.* p. 30, Santarem; *H. avesta*, ibid., Sumatra; *H. feralia*, *l. c.* p. 30, Java; *H. palæa*, ibid., origin not stated; *H. oceia*, ibid., Philippines; *H. phigalia*, *l. c.* p. 32, *H. eliena*, ibid., and *H. petalia*, ibid., Australia; *H. liburnia*, *l. c.* p. 33, Philippines; *H. latoia*, *l. c.* p. 34, Singapore; *H. heræa*, ibid., Ega; *H. laronia*, *l. c.* p. 35, and *H. galatia*, *l. c.* p. 36, Old Calabar; *H. beturia*, ibid., Neilgherries and Macassar; *H. utha*, *l. c.* p. 37, Cuba; *H. ficulnea*, ibid., Borneo. Hewitson also proposes the name of *H. hypæpa* (*l. c.* p. 25) for *Celænorrhinus thrax* (Hübn.), the latter name being preoccupied by Linnæus.

Pyrgus sandaster, Trimen, Trans. Ent. Soc. Lond. 1868, p. 92, pl. 5. fig. 9, Cape Colony.

Pirgus (sic) *erythrostictus*, Prittwitz, Stett. ent. Zeit. 1868, p. 186, pl. 4. fig. 1 (head and venation), Corcovado; *P. polyotor*, Prittw. *l. c.* p. 186, pl. 4. fig. 3 (*P. polyctor*), Corcovado.

Goniloba vulpecula, Prittwitz, *l. c.* p. 187, pl. 4. fig. 2, Australia.

Cyclopides syrnix, Trimen, *l. c.* p. 93, pl. 5. fig. 8, and *C. ægipan*, Trimen, *l. c.* p. 94, Amatola Mountains.

Cyclopides. Hewitson (Desc. N. Hesp.) describes the following new species of this genus:—*C. caicus*, *l. c.* p. 40, and *C. cænides*, *l. c.* p. 41, Venezuela; *C. carmides*, *l. c.* p. 41, and *C. cariate*, *l. c.* p. 44, Madagascar; *C. argenteo-ornatus*, *l. c.* p. 41, Swan River; *C. cheles*, *l. c.* p. 42, *C. callicles*, ibid., Damara Land; *C. capenas*, *l. c.* p. 43, Zambesi; *C. camertes*, ibid., Singapore; and *C. ceramas*, *l. c.* p. 44, Neilgherries.

Ancyloxipha ardonia, Hewitson, Descr. New Hesp. p. 45, Macassar and Sarawak; *A. agraulia*, Hewitson, ibid., Swan River; and *A. aurantiaca*, Hewitson, ibid., origin unknown.

Leucochitonea. Hewitson (Descr. New Hesp.) describes the following new species of this genus:—*L. lucullea*, *l. c.* p. 46, Ega; *L. libethra*, *l. c.* p. 47, St. Paulo; *L. limæa*, ibid., Cayenne; *L. lerina*, *l. c.* p. 48, Cayenne and Pará; *L. laviana*, ibid., Nicaragua; *L. leucola*, *l. c.* p. 49, Minas Geraes; *L. lassia*, ibid., and *L. trifasciata*, *l. c.* p. 50, origin not stated; and *L. lucaria*, *l. c.* p. 50, Cayenne. Hewitson also gives new names to several species of other authors, as follows:—*L. lagia*, *l. c.* p. 47=*herennius* (Hübn. nec Cram.); *L. lancea*, ibid.=*jovianus* (Hübn. nec Cram.); and *L. laginia*, *l. c.* p. 48=♂ *niveus* (Hübn.).

Pterygospidea. Hewitson describes the following new species:—*P. pteria*, *l. c.* p. 51, Philippines; *P. permena*, ibid., Macassar and Celebes; *P. panthea*, *l. c.* p. 52, Ega; *P. pekahia*, ibid., Venezuela; *P. leptogramma*, *l. c.* p. 53, Philippines; *P. pygela*, ibid., Borneo and Malacca; and *P. phaycsia*, *l. c.* p. 54, Pará.

Pterygospidea ransonnetii, R. Felder, *l. c.* p. 284, Kirinde (Ceylon ?)

Pamphila (?) *mackenii*, Trimen, *l. c.* p. 95, pl. 6. fig. 8, Natal; *P. dysmephila*, Trimen, *l. c.* p. 96, pl. 6. fig. 10, Caffraria.

Sphingidæ.

Grote and Robinson discuss the characters of several species of *Sesia* (*Macroglossa*), and come to the conclusion that *Hæmorrhagia* cannot be maintained as a distinct genus (Trans. Amer. Ent. Soc. ii. p. 181). Grote and Robinson also redescribe their *Euproserpinus phaëton* (*l. c.* p. 181).

Sphinx harrisii. Grote remarks upon the synonymy of this species. *Lapara bombycoides* (Walk.) is identical with it (ibid. p. 115).

Depuiset confirms Erichson's opinion that *Deiliphila esulæ* is founded upon fabricated specimens. Bull. Soc. Ent. Fr. 1868, pp. xxviii–xxix. Künckel maintains that the *D. esulæ* is a dark variety of *D. euphorbiæ*, ibid.

Sphinx convolvuli. Hellins publishes (Ent. M. Mag. v. pp. 160–162) some observations on its occurrence in Britain, and on its mode of life.

Sesia thetis, sp. n. (Boisd. MS.), Grote and Robinson, Trans. Amer. Ent. Soc. i. p. 325, pl. 6. fig. 36, California.

Sesia axillaris, sp. n., Grote and Robinson, Trans. Amer. Ent. Soc. ii. p. 180, Texas.

Sesiidæ.

Sesia cephiformis (Staud.) was bred by A. Hartmann, from knots on the twigs and branches of *Juniperus communis* (Stett. ent. Zeit. 1868, p. 109).

Hopley and Healy notice white-belted examples of *Sesia culiciformis*. Ent. M. Mag. iv. p. 183.

J. Bryant notices a yellow-banded variety of *Sesia culiciformis*. Ent. M. Mag. iv. p. 234.

Ægeria exitiosa (Say) and *Æ. tipuliformis* (Linn.). On the habits of these species see Walsh, Pract. Entom. i. pp. 27, 28, & 29.

Zenodoxus, g. n., Grote and Robinson, Trans. Amer. Ent. Soc. ii. p. 183. Allied to *Sesia*; head smaller, and thorax stouter; antennæ with long fringes; hind wings closely scaled. Sp. *Z. maculipes*, sp. n., p. 184, Texas.

Ægeria pictipes, sp. n., Grote and Robinson, *l. c.* p. 182, pl. 2. fig. 64, Pennsylvania.

Castniidæ.

Alypia. Grote and Robinson (Trans. Amer. Ent. Soc. i. pp. 326–328) notice the North-American species of this genus, of which they describe several as new.

Castnia inca (Walk.). Frauenfeld records the capture of an example of this insect in the gardens at Miramar. Verh. zool.-bot. Ges. in Wien, xviii. p. 157.

Alypia. Grote and Robinson describe the following new species of this genus from California (Trans. Amer. Ent. Soc. i.):—*A. dipsaci*, *l. c.* p. 326, pl. 6. fig. 37; *A. sacramenti*, *l. c.* p. 327, pl. 6. fig. 38; *A. lorquinii*, *l. c.* p. 328, pl. 6. fig. 39; and *A. mariposa*, *l. c.* p. 329, pl. 6. fig. 40.

Euschirrhopterus gloveri, sp. n., Grote and Robinson, Trans. Amer. Ent. Soc. ii. p. 185, Texas.

Zygænidæ.

Callalucia (Grote) = *Gnophæla* (Walk.), according to Grote and Robinson (Trans. Amer. Ent. Soc. i. p. 331). The species referred to it by them are *G. æquinoctialis* (Walk.), *G. vermiculata* (Grote), and a new species.

Horama texana (Grote) = *Euchromia plumipes* (Clem. nec Drury) according to Grote (Trans. Amer. Ent. Soc. ii. p. 116).

Zeller (Verh. zool.-bot. Ges. in Wien, xviii. pp. 575–578) notices the peculiarities of some Carinthian specimens of *Zygæna loniceræ*, and indicates the variations of *Z. medicaginis* taken by him in Carinthia. He doubts the distinctness of *Z. transalpina* (H.-Sch.) from the latter species.

Birchall notices the prevalence of diminutive examples of *Zygæna filipendulæ* in the Isle of Man. Proc. Ent. Soc. Lond. 1868, p. xxxviii.

The larva of *Zygæna loniceræ* is described by Buckler, Ent. M. Mag. iv. pp. 252–254, and that of *Z. nubigena* by Buckler, Ent. M. Mag. v. pp. 73–75.

Ctenucha ochroscapsus, sp. n., Grote and Robinson, Trans. Amer. Ent. Soc. i. p. 330, California.

Gnophæla hopfferi, sp. n., Grote and Robinson, *l. c.* p. 332, California.

Cydosia aurivitta, sp. n., Grote and Robinson, Trans. Amer. Ent. Soc. ii. p. 186, Texas.

Hepialidæ.

Smith records (Proc. Ent. Soc. Lond. 1868, p. xviii) the occurrence of three boring larvæ, belonging either to *Zeuzera* or to allied genera, in coffee and other trees in India. A further account of one of these, the "Charcoal-borer," said to be nearly allied to *Hepialus*, is given by Bidie (*l. c.* p. xxx).

Hepialus pyrenaicus. The habits of the ♀ noticed by Bellier de la Chavignerie and others, Bull. Soc. Ent. Fr. 1868, p. cvi.

The metamorphoses of *Hepialus hectus* are described by Buckler, Ent. M. Mag. v. pp. 177–178.

Pielus umbraculatus, sp. n., Guenée, Ent. M. Mag. v. p. 1, and *P. variolaris*, sp. n., Guenée, ibid., New Zealand.

Bombycidæ.

Ceratocampides. Boisduval (Ann. Soc. Ent. Fr. 4e sér. viii. pp. 309–319) publishes a revision of the insects of this group, which he identifies with the *Dryocampini* of Grote and Robinson, removing, however, the genus *Adelocephala*, as forming a distinct tribe. He admits only two genera—*Ceratocampa*, including *regalis* (Fab.) = *laocoon* (Cram. ex parte, Stoll) = *regia* (Smith), *sepuleralis* (Grote & Rob.), *mexicana* (Grote & Rob.), *laocoon* (Cram.), *phoronea* (Grote & Rob.), and three new species, and a new genus, *Basilona*.

Grote (Trans. Amer. Ent. Soc. ii. pp. 65–67) discusses the North-American *Platypterygides* and the general synonymy of the group. *Cilix* is unrepresented in North America. Grote recognizes the genera *Drepana* and *Platypteryx* as restricted by Stephens and others, and retains a third genus, *Dryopteris* (Grote). *Edapteryx* (Pack.) is identical with *Platypteryx*. The species are:—*Drepana arcuata* (Walk.) = *Plat. fabula* (Grote); *D. geniculata* (Grote); *Platypteryx bilineata* = *Edapteryx bilineata* (Pack.); *Dryopteris rosea* (Walk., Grote) + *Drep. marginata* (Walk.) + *Plat. formula* (Grote) = *Cilix americana* (H.-Sch.) and *D. irrorata* (Pack.). *Drepana fasciata* (Steph.) is unknown to the author, and *D. marginata* (Walk.) is a variety of *Dry. rosea*.

Thyridopteryx ephemeræformis (Pack. nec Steph.) = *Phobetron pithecium* (Pack.), according to Grote, Trans. Amer. Ent. Soc. ii. p. 118.

Adoneta voluta (Clem.) = *Limacodes spinuloides* (H.-Sch.) = *Cyclopteryx spinul.* (Pack.), according to Grote, Trans. Amer. Ent. Soc. ii. p. 118.

Guenée describes the specific distinctions of *Bombyx quercus*, *callunæ*, and *spartii*, and indicates the characters both of the larvæ and perfect insects by which they are distinguished. His examples of the third form are from

Provence, and constitute a slight variety which he calls *viburni*. Ann. Soc. Ent. Fr. 4e sér. viii. pp. 403–410.

Attacus lebeau (Guér.) is noticed, and its characters indicated by Laboulbène. Bull. Soc. Ent. Fr. 1868, pp. lxxiv–lxxv.

Psychidæ. Zeller (Verh. zool.-bot. Ges. in Wien, xviii. pp. 578–580) notices the following species as occurring in Carinthia:—*Psyche viciella* and *pulla*, and *Fumea bombycella*, and *suriens*.

Trouvelot indicates some points of analogy in the life-history of *Limacodes* and some Hymenoptera (Proc. Bost. Soc. Nat. Hist. xii. pp. 92–63).

T. W. Wood (Proc. Ent. Soc. Lond. 1868, p. xxvii) notices the habits of some exotic Saturniides, namely, *S. cynthia, promethea, cecropia*, and *polyphemus*. He remarks on the presence of a moveable appendage beneath the anterior tibiæ, which is used as a comb for cleaning the antennæ.

Ebrard notices an instance of the exclusion of a ♀ *Bombyx quercus* having the fore wings beneath the hind ones. Bull. Soc. Ent. Fr. 1868, p. xc.

Lasiocampa pini. Millière has obtained a second brood of this species, and gives an account of his rearing them. Bull. Soc. Ent. Fr. 1868, p. xci.

Clisiocampa sylvatica. The habits of the larva, sometimes called the "Army-worm," noticed by Walsh, Pract. Entom. ii. pp. 112–113.

Ebrard gives an account of his success in rearing *Bombyx trifolii*. Bull. Soc. Ent. Fr. 1868, p. xc.

The larva of *Clostera timon* (Hübn.) is described by C. Iven, Horæ Soc. Ent. Ross. v. pp. 91–95. Erschoff also notices this larva, *l. c.* pp. 117–118.

Berce notices the ravages committed by the larvæ of *Bombyx dispar* in the forest of Fontainebleau in 1867 and 1868 (Bull. Soc. Ent. Fr. 1868, p. lxi). Doüé and Goossens refer to damage caused by this insect at Vésinet and Bourray. Ibid. p. lxii.

R. Bunker records his having bred a specimen of *Bombyx cecropia* with no antennæ. Amer. Natural. ii. p. 381.

A gynandromorphous specimen of *Lasiocampa quercus* is noticed by Wilson. Proc. Ent. Soc. Lond. 1868, p. xxxviii.

Guérin-Méneville has combined his 'Revue de Sériciculture comparée' with the 'Revue et Magazin de Zoologie,' the volume of which for 1868 contains notices on Sericiculture at the following places:—p. 43, on the mode of obtaining good eggs of the silkworm (Guér.-Mén.); pp. 91, 118, and 154, extracts from the journal of sericicultural travels, by Guérin-Méneville; pp. 267, 313, 444, and 474, letters to M. Chevreul, by Guérin-Méneville; p. 364, on the restoration of sericiculture by local societies, by Guérin-Méneville and Robert; p. 411, on the establishment of an Austrian station of experimental sericiculture; p. 414, on the oak-silkworm in 1868, by Guérin-Méneville; p. 446, on probable sources of sound silkworms' eggs. The volume also contains abstracts of the communications on sericiculture made to the Academy of Sciences during the past year.

A. Wallace has published (Ent. Annual, 1869, pp. 94–118) a sketch of the recent progress of sericiculture.

Grote publishes remarks on silk-producing Lepidoptera (Pract. Entom. i. pp. 13, 14, 38, 39, 58, 59).

Girard notices some specimens illustrative of sericiculture exhibited at the Palais de l'Industrie. Bull. Soc. Ent. Fr. 1868, pp. lxxi–lxxiii, lxxix–lxxxi, lxxxiii–lxxxv.

Guérin-Méneville publishes some notes on the cultivation of *Bombyx yama-maï*. Bull. Soc. Ent. Fr. 1868, pp. c–ci.

Saturnia yama-maï. Hopley, after losing the greater part of a brood of this insect, found that the survivors drank freely of water. He subsequently moistened their food occasionally, and the remaining larvæ continued healthy and spun large cocoons. He suggests that much of the disappointment experienced in rearing this silkworm is due to keeping it too carefully from contact with moisture. Ent. M. Mag. v. pp. 149–150.

Girard notices the progress made with *Attacus yama-maï* and *A. cynthia* at the garden in the Bois de Boulogne. Bull. Soc. Ent. Fr. 1868, pp. xcvii–xcix.

Bombyx yama-maju. Kaspar reports on experiments in rearing this species at Kremsier (Sitzungsber. zool.-bot. Ges. in Wien, 1868, pp. 85–87).

Saturnia cynthia. Kaspar reports on his experiments with this species at Kremsier (Sitzungsber. zool.-bot. Ges. in Wien, 1868, pp. 87, 88).—W. V. Andrews treats of the rearing of *Bombyx cynthia*, chiefly with reference to its cultivation in the United States. Amer. Natural. ii. pp. 311–320. —M'Carter publishes (Journ. N. China Branch, Roy. Asiat. Soc. n. s. iii. pp. 75–80) some remarks on *Saturnia cynthia*, relating chiefly to the Chinese treatment of the silk.

A. G. Latham calls attention to *Pachypasa effusa* as a supposed new silk-producing insect (Proc. Lit. & Phil. Soc. Manch. vii. pp. 24–26).

Salimbeni (Ann. Soc. Nat. Modena, iii. pp. 41–56) indicates the characters presented by silk-moths affected with corpuscular disease, and describes the precautions which the knowledge of these characters may enable cultivators to take in order to avoid breeding from infected eggs.

New genera and species :—

Basilona, g. n., Boisduval, Ann. Soc. Ent. Fr. 4e sér. viii. p. 317. Allied to *Ceratocampa*; antennæ of ♂ shortly pectinated for two-thirds of their length; wings spread out in repose, yellow, each with a discoidal stigma. Known species *B. imperialis* (Fab.)=*imperatoria* (Smith). Sp. n. *B. cacicus*, Boisd. *l. c.* p. 318, Brazil; *B. ducalis*, Boisd. *l. c.* p. 319, Brazil.

Ceratocampa brissotii, Boisduval, *l. c.* p. 312, Brazil; *C. ixion*, Boisduval, *l. c.* p. 315, Brazil; and *C. principalis*, Boisduval, *l. c.* p. 316, Brazil.

Hemileuca grotei (Hopffer), Grote and Robinson, Trans. Amer. Ent. Soc. ii. p. 192, pl. 2. fig. 60, Texas.

Hyperchiria zelleri, Grote and Robinson, *l. c.* p. 193, pl. 2. fig. 65, United States.

Saturnia rhodoessa, sp. n., Prittwitz, Stett. ent. Zeit. 1868, p. 246, pl. 3. fig. 1, Peru.

Attacus lebeau, sp. n., Guérin-Méneville, Rev. et Mag. Zool. 1868, p. 320, Caraccas.

Monoleuca, g. n., Grote and Robinson, Trans. Amer. Ent. Soc. ii. p. 187. Allied to *Euclea*; rather slender; wings broad and rounded; antennæ ⅔ pectinate in ♂, simple in ♀; tarsi with short scales. Sp. *Limac. semifascia* (Walk.), *Monol. semif.* Grote and Rob. *l. c.* p. 188, pl. 2. fig. 63.

Heuretes, g. n., Grote and Robinson, *l. c.* p. 190. Allied to *Tortricidia* (Pack.); antennæ very short, setaceous, thickly scaled and flexuous at apex. Sp. *H. picticornis*, sp. n., Grote and Rob. *l. c.* p. 190, St. Thomas, W. I.

Limacodes (*Lithacodes*) *rectilinea*, Grote and Robinson, *l. c.* p. 188, pl. 2. fig. 62, South Carolina.

Adoneta pygmæa, Grote and Robinson, *l. c.* p. 189, Texas.

Psyche confederata, Grote and Robinson, Trans. Amer. Ent. Soc. ii. p. 191, pl. 3. figs. 66, 67 (♂ and case), Texas.

Liparis japonica (Motsch.) is probably a variety of *L. dispar*. Ballion, Stett. ent. Zeit. 1868, p. 168.

Icthyura (sic) *ornata*, Grote and Robinson, Trans. Amer. Ent. Soc. ii. p. 191, California.

Arctiidæ.

Arctia nais (Hübn.). The male of this species is *A. phalerata* (Harr.). A variety of the ♀ is *A. decorata* (Saund.), which is also described by Walker as *Apantesis radians* and *Aloa colorata*. Grote, Trans. Amer. Ent. Soc. ii. p. 117.

Prittwitz remarks (Stett. ent. Zeit. 1868, p. 185) that his *Callimorpha venus* is quite distinct from *Eucyane amica* (Cram.), but perhaps identical with *C. fida* (Hübn.), which has been regarded as synonymous with the latter.

S. Ebrard obtained two generations of *Chelonia villica* in 1867. Bull. Soc. Ent. Fr. 1868, p. xl.

J. A. Forster notices an example of cannibalism in the larvæ of *Chelonia caja*. Entomologist, iv. pp. 93, 94. See also Miss Newman, ibid. p. 104.

Epicallia virginalis (Boisd.) is figured by Grote and Robinson, Trans. Amer. Ent. Soc. i. pl. 6. fig. 42. They refer to the same genus *Agarista guttata* (Boisd.).

Arctia dahurica (Boisd.) is described and figured by Grote and Robinson (*l. c.* p. 336, pl. 6. fig. 41).

Migoplastis, g. n., R. Felder, Verh. zool.-bot. Ges. in Wien, xviii. p. 285. Allied to *Leptosoma*; antennæ (♀) rather more broadly pectinated, head larger, palpi longer, abdomen stouter, legs longer and more slender. Sp. *M. ceylanica*, sp. n., R. Felder, *l. c.* p. 285.

Digama insulana, R. Felder, *l. c.* p. 285, Kandy.

Arctia achaia, sp. n., Grote and Robinson, Trans. Amer. Ent. Soc. i. p. 334, pl. 6. figs. 45, 46, California.

Nemeophila cæspitis, sp. n., Grote and Robinson, *l. c.* p. 337, pl. 6. fig. 43, and *N. cichorii*, sp. n., Grote and Rob. *l. c.* p. 338, pl. 6. fig. 44, California.

Halesidota angulifera, sp. n., Walker, Lord's Naturalist in Vancouver's Island &c. ii. p. 335, and *H.*? *roseata*, sp. n., Walker, *l. c.* p. 336, Vancouver's Island.

Messaga maritona, sp. n., Butler, Proc. Zool. Soc. 1868, p. 224, pl. 17. fig. 1, Sierra Leone; *M. delicia*, sp. n., Butler, *l. c.* p. 224, pl. 17. fig. 2, Gold Coast.

Lithosiidæ.

Setina. Zeller remarks (Stett. ent. Zeit. 1868, pp. 131, 132) upon some species of this genus. In the Carinthian Alps he found only *S. irrorella*. *Setina alpestris* does not belong to the North-German *S. kuhlweinii*.

Hellins (Ent. M. Mag. v. pp. 109–114) notices the larvæ of the following species of this family:—*Lithosia molybdeola*, *griseola*, *mesomella*, *plumbeola*, *helveola*, and *aureola*, and *Calligenia miniata*.

Cisthene unifascia, sp. n. Grote and Robinson, Trans. Amer. Ent. Soc. ii. p. 187, pl. 2. fig. 61, Florida and Texas.

Lithosia oblitterans, sp. n., R. Felder, *l. c.* p. 285, Ceylon.

Noctuidæ.

Microcœlia obliterata (Grote) is stated by Grote and Robinson (Trans. Amer. Ent. Soc. ii. p. 195) to be a marked variety of *M. diphteroides* (Guen.). The typical form and variety are figured by them (*l. c.* pl. 3. figs. 69, 70).

Microcœlia vinnula (Grote) is an *Acronycta*. Grote, Trans. Amer. Ent. Soc. ii. p. 118.

Hadena distincta (Hübn.) is described and figured by Grote and Robinson (*l. c.* p. 197, pl. 3. fig. 72).

Philomma henrietta (Grote) belongs to Walker's genus *Derrima*, which Grote considers to be allied to *Anthœcia* and *Heliothis*. Trans. Amer. Ent. Soc. ii. p. 119.

Leucania biundulata (Motsch.)=*turca* (Linn.) according to Ballion (Stett. ent. Zeit. 1868, p. 168).

Bellier de la Chavignerie states (Bull. Soc. Ent. Fr. 1868, p. xx) that *Catocala nupta*, *adultera*, and *concubina* belong to one species, the last-mentioned forming a transition between the former two.

Zeller (Verh. zool.-bot. Ges. in Wien, xviii. p. 581) refers to his determination of the *Phalæna clavis* (Hufn.) which has led to the adoption of that name for *Agrotis segetum*. He considers the identity of the species to be by no means made out, and recommends the retention of the names *A. segetum* and *A. corticea* for the two species which have been variously identified with *P. clavis*.

Lynch records the occurrence of a specimen (imported) of *Noropsis fastuosa* (Guen.) at Limehouse, and gives a figure of the insect (Ent. M. Mag. iv. p. 193).

Leucania albipuncta (W. V.). Its occurrence in Britain recorded by T. H. Briggs, Ent. M. Mag. v. p. 173. Figured by Knaggs, Ent. Ann. 1869, front. fig. 4.

Plusia ni (Engr.). The occurrence of this species in Britain is recorded by Hellins, Knaggs, and D'Orville, Ent. M. Mag. v. pp. 107 and 127, 128.

Agrotis cinerea. Goossens notices this species, Bull. Soc. Ent. Fr. 1868, p. lxxviii.

Millière (Ann. Soc. Linn. Lyon, n. s. xv.) describes and figures the metamorphoses of *Xanthodes malvæ* (Esp.), *l. c.* p. 226, pl. 84. figs. 3–7, and the imago of *Hadena assimilis* (Doubl.), *l. c.* p. 280, pl. 84. fig. 8.

The larvæ of the following species are described by Buckler in Ent. M. Mag.:—*Agrotis perla*, vol. iv. p. 199; *Dasypolia templi*, *l. c.* pp. 251–253; *Acontia luctuosa*, vol. v. p. 156.

The Entomologist of 1868 contains notices of the early stages of the following species by Newman:—*Anasta myrtilli*, larva, p. 21; *Hadena aducta*, larva, pp. 75, 76; *Triphœna interjecta*, larva, pp. 91, 92; *Tæniocampa rubricosa*, history, p. 158; *Cerastis vaccinii*, larva, p. 158; *Dysthymia luctuosa*, history, pp. 174–176.

Acronycta alni. The natural history of this species is described by H. A. Stowell, Ent. M. Mag. v. pp. 144–146.

Gortyna lunata (Frey). M. Sand notices briefly the life-history of this pecies. Bull. Soc. Ent. Fr. 1868, p. xiii.

Agrotis suffusa. Hellins discusses the question of the double-broodedness of this species, which he is not inclined to admit. Ent. M. Mag. iv. p. 255.

Agrotis spini (Guen.). Letters from G. Bennett, W. B. Clarke, and A. W. Scott have been communicated to the Entomological Society (Proc. Ent. Soc. Lond. 1868, pp. i–vii) describing immense flights of moths of this species observed in New South Wales. Scott notices the habits of the insects, and describes the mode in which the natives prepare them for food. He states that they are called "Boogong" and "Gnarliong."

Bidie notices a larva, supposed to be that of an *Agrotis*, which attacks the bark of young coffee-trees in Southern India, and destroys the trees by ringing them. It is hence called the "Ringer," and is considered by the author to be identical with the "Black Grub" of the Ceylon plantations (Proc. Ent. Soc. Lond. 1868, p. xxviii).

On the natural history of the "Cutworms," larvæ of species of *Agrotis* and *Hadena*, see Walsh, Pract. Entom. i. pp. 85, 86; see also vol. ii. pp. 64–66.

"Army-worms." This name has been applied in different places in the United States to the larvæ of *Anomis xylina*, *Heliothis armigera*, and *Leucania unipuncta*, of which Walsh gives an account (Pract. Entom. ii. pp. 111, 112). He also states that the same name has been given to the larva of *Clisiocampa sylvatica.*

Gortyna zeæ. Habits noticed by Walsh, Pract. Entom. ii. pp. 115, 116.

Agrotis c-nigrum. Larvæ of this species found on the snow in winter proved to be infested by larvæ of *Microgaster*. Rogenhofer suggests (Sitzungsber. zool.-bot. Ges. in Wien, 1868, p. 7) that the presence of the parasites may have driven the *Agrotis* larvæ to wander on the snow.

New genera and species:—

Alysia, g. n., Guenée, Ent. M. Mag. v. p. 3. Allied to *Luperina*?; antennæ ♂ long, crenulated, each crenulation with a tuft of hairs at tip and a longer one in middle; palpi stout, ascending, joint 3 very distinct, scaly; thorax broad, quadrate, hairy; abdomen not crested; tarsi with spines. Sp. *A. specifica*, sp. n., Guenée, *l. c.* p. 3, New Zealand.

Nitocris, g. n., Guenée, *l. c.* p. 4. Allied to *Noctua*; antennæ slender, pointed; palpi robust, slightly ascending, joint 2 broad, scaly, glossy, joint 3 short, but very distinct; thorax quadrate, scaly, glossy; patagia very short, distant, spotted with black at extremity; abdomen not crested; legs with spiny tarsi, spurs long and slender; orbicular stigma very small, reniform, eroded inferiorly. Sp. *N. bicomma* (Guen.) = *Mamestra comma* (Walk.); *N. limbosa*, Guen. *l. c.* p. 5, Australia; *N. exundans*, Guen. ibid., Australia; *N. nuna*, Guen. *l. c.* p. 6, Australia; and *N. epiplecta*, Guen. ibid. (= *Ochropleura raristigma*, Walk.?).

Choephora, g. n., Grote and Robinson, Trans. Amer. Ent. Soc. ii. p. 199. Allied to *Orthosia.* Sp. *C. fungorum*, sp. n., Grote and Rob. *l. c.* p. 200, pl. 3. fig. 74, Atlantic States.

Acronycta morula, Grote and Robinson, Trans. Amer. Ent. Soc. ii. p. 196, pl. 3. fig. 75, New York.

Arzama obliquata, Grote and Robinson, Trans. Amer. Ent. Soc. i. p. 339, pl. 6. fig. 47, Eastern States.

Gortyna purpurifascia, Grote and Robinson, *l. c.* p. 341, pl. 7. fig. 51, *G. speciosissima*, Grote and Rob. *l. c.* p. 342, pl. 7. fig. 52, and *G. inquæsita*, Grote and Rob. *l. c.* p. 344, Eastern States.

Hydrœcia sera, Grote and Robinson, *l. c.* p. 345, pl. 7. fig. 55, Eastern States.

Nonagria juncicolor, Guenée, Ent. M. Mag. v. p. 2, New Zealand.

Agrotis (*Spælotis*) *cœrulea*, Guenée, *l. c.* p. 38, *A. admirationis*, Guenée, ibid., and *A. ceropachoides*, Guenée, *l. c.* p. 39, New Zealand.

Agrotis. Grote and Robinson describe the following new North-American species:—*A. collaris*, *l. c.* p. 348, pl. 7. fig. 53, New York; *A. geniculata*, *l. c.* p. 349, pl. 7. fig. 54, Philadelphia; *A. repentis*, *l. c.* p. 350, pl. 7. fig. 58, New York; *A. murœnula*, *l. c.* p. 352, pl. 7. fig. 48, New York, Rhode Island; and *A. violaris*, *l. c.* p. 353, pl. 7. fig. 59, Pennsylvania.

Xanthia rolla, Grote and Robinson, *l. c.* p. 346, pl. 7. fig. 49, and *X. puta*, Grote and Rob. *l. c.* p. 347, pl. 7. fig. 50, New York.

Eumictis sistens, Guenée, *l. c.* p. 39, New Zealand.

Hadena nervata, Guenée, *l. c.* p. 40, New Zealand.

Hadena subjuncta, Grote and Robinson, Trans. Amer. Ent. Soc. ii. p. 198, pl. 3. fig. 71, Atlantic States.

Xylocampa cucullina, Guenée, *l. c.* p. 40, New Zealand.

Xylina bethunei, Grote and Robinson, Trans. Amer. Soc. Ent. i. p. 354, pl. 7. fig. 56, Eastern States; *X. capax*, Grote and Rob. *l. c.* p. 355, pl. 7. fig. 57, Pennsylvania.

Cucullia convexipennis, Grote and Robinson, Trans. Amer. Ent. Soc. ii. p. 201, pl. 3. fig. 76, Atlantic States.

Dyops futilis, Grote and Robinson, *l. c.* p. 202, pl. 3. fig. 73, Florida.

Plusia mappa, Grote and Robinson, *l. c.* p. 204, Canada.

Erastria synochitis, Grote and Robinson, Trans. Am. Ent. Soc. i. p. 357, and *E. musta*, Grote and Robinson, *l. c.* p. 358, Eastern States.

Micra himmighoffeni, Millière, *l. c.* p. 200, pl. 82. figs. 1, 2, Barcelona.

Geometridæ.

Gnophos meyeraria (Lah.)=*ophthalmicata* (Led.)=*ambiguata* (Dup.), according to Staudinger (Stett. ent. Zeit. 1868, p. 35).

Halthia eurymede (Motsch.)=*euripile* (Ménétr.) and *Boarmia gaschkewitschii* (Motsch.) probably belongs to *Rhyparia* or *Zerene*, according to Ballion (Stett. ent. Zeit. 1868, pp. 168, 169).

Acidalia ossearia of British authors=*dilutaria* (Hüen.)=*interjectaria* (Boisd.). H. Burney, Entomologist, iv. p. 19. See also Knaggs and Doubleday, *l. c.* p. 30.

Eudalimia subsignaria is figured by Packard, Amer. Natural. ii. p. 33, fig. 4.

Ellopia fasciaria. Jordan remarks on the variation of this species. Ent. M. Mag. iv. p. 185.

Zeller (Verh. zool.-bot. Ges. in Wien, xviii. pp. 582–592) gives a list of numerous species of this family collected by him in Carinthia. Notes of more or less general interest are appended to the following species:—*Nemoria porrinata*, *Acidalia perochraria*, *A. straminata*, *A. incanata* (probably =*Phalæna seriata*, Schr.), *A. dilutaria*, *A. holosericearia*, *A. deversata* (probably founded on full-coloured specimens of *A. inornata*), *A. commutata*, *Zonaria*

suppunctaria (perhaps a summer generation of *Z. trilinearia*), *Gnophosia glaucinaria*, *G. serotinaria*, *G. dilucidaria*, *Fidonia limbaria* (var. *rablensis*), *Cidaria scripturaria*, *C. alaudaria*, *C. tæniata*, *C. minorata* (=*derasata*, Schr.), *C. albulata*, *Eupithecia grapharia*, *E. scabiosata* (=*obrutaria*, H.-Sch.), *E. modicaria*, and *E. plumbeolata*.

A list of species of *Eupithecia*, taken near Derby, is published by G. Baker, Ent. M. Mag. v. pp. 21, 22. Also Entomologist, iv. pp. 79–80.

Amphidasys betularia. D'Orville and Courtice notice the prevalence of black and darkly mottled forms among the progeny of the union of an ordinary ♀ with a black ♂. Ent. M. Mag. v. pp. 148, 149.

Millière (Ann. Soc. Linn. Lyon, n. s. xv.) describes and figures the transformations of the following species:—*Nemoria aureliaria* (Mill.), *l. c.* p. 189, pl. 81. figs. 1–5; *Ephyra pupillaria* (Hübn.), var. *gyraria* (Dup.), *l. c.* p. 196, pl. 81. figs. 9–12; *Acidalia mediaria* (Hübn.), *l. c.* p. 205, pl. 82. figs. 5–7; and *Eucrostis indigenaria* (Hübn.), *l. c.* p. 207, pl. 82. figs. 8–11; also the two sexes of *Iodis impararia* (Guen.), *l. c.* p. 224, pl. 84. figs. 1, 2.

Zeller describes the natural history of *Boarmia glabraria* (Hübn.) and *Acidalia corrivalaria* (Kretschm.). Stett. ent. Zeit. 1868, pp. 405–413.

The larvæ of the following species are described in Ent. M. Mag. vol. v.: —*Eupithecia consignata* by Crewe, p. 72; *Fidonia pinetaria* by Hellins, p. 108; and the pupa of *Eupithecia consignata* by Greene, p. 73.

The Entomologist, of 1868, contains notices of the following species by Newman:—*Acidalia bisetata*, history, pp. 73, 74; *Eubolia palumbaria*, history, pp. 74, 75 (see also Ragonot, *l. c.* p. 135); *Timandra amataria*, larva, pp. 95, 96; *Scotosia vetulata*, history, pp. 123, 124; and *Ennomos fuscantaria*, history, pp. 137, 138. Also the larva of *Eupithecia consignata* by Crewe, p. 96.

Ennomos subsignaria. Habits noticed in Pract. Entom. i. pp. 57, 58.

Melanthia ocellata. A. Wilson notices the habits of this species. Entomologist, iv. p. 18.

Scoria dealbata. The oviposition of this species described by Newman from Jeffrey's notes. Entomologist, iv. p. 100.

Hellins publishes (Ent. M. Mag. v. pp. 95–99) some notes on the larvæ and eggs of various species of *Acidalia*. He notices the eggs of the following species:—*A. holosericata*, *interjectaria*, *scutulata*, *bisetata*, *immutata*, and *imitaria*, and then describes the larvæ of *A. holosericata*, *interjectaria*, *scutulata*, and *bisetata*.

Goossens notices the larva of *Hibernia rupicapraria*. Bull. Soc. Ent. Fr. 1868, p. lxvi.

Sterrha sacraria. Hellins (Ent. M. Mag. iv. pp. 179–180) remarks on this species and the difficulty of rearing it. He also notices the prevalence of individual variation in the larvæ.

Erber describes the larvæ of *Sterrha rosearia* (Tr.) as observed by him in Corfu. It lives on a species of *Alisma*. (Verh. zool.-bot. Ges. in Wien, xviii. p. 906.)

Barrett has observed larvæ of *Abraxas grossulariata* feeding on *Sedum telephium*. Ent. M. Mag. iv. p. 182.

Butler records that Lizards and Frogs refuse to eat the larvæ of *Abraxas grossulariata*. He adds that Frogs also reject other larvæ taken from the gooseberry, such as those of *Halia vauaria* and the Gooseberry Sawfly.

New genera and species:—

Polygonia, g. n., Guenée, Ent. M. Mag. v. p. 41. Allied to *Ennomos*. Sp. *P. fortinata*, sp. n., Guenée, *l. c.* p. 41, New Zealand.

Dasyuris, g. n., Guenée, *l. c.* p. 92. Allied to *Coremia*. Sp. *C. euclidiata*, *glyphicata*, and *heliacaria* (Guen.); *D. partheniata*, sp. n., Guenée, *l. c.* p. 93, New Zealand.

Helastia, g. n., Guenée, *l. c.* p. 94. Allied to *Scotosia*. Sp. *H. eupitheciaria*, sp. n., Guenée, *l. c.* p. 95, New Zealand.

Calledapteryx, g. n., Grote, Trans. Amer. Ent. Soc. ii. p. 119. Allied to *Drepanodes*. Sp. *C. dryopterata*, sp. n., Grote, *l. c.* p. 120, New York, Pennsylvania.

Gnophos pannularia, Guenée, Ent. M. Mag. v. p. 42, New Zealand.

Asthena mullata, Guenée, *l. c.* p. 42, New Zealand.

Panagra scissaria, Guenée, *l. c.* p. 43, New Zealand.

Fidonia (?) *servularia*, Guenée, *l. c.* p. 43, New Zealand.

Hibernia borcophilaria, Guenée, *l. c.* p. 61, New Zealand.

Larentia corcularia, Guenée, *l. c.* p. 61, *L. infantaria* and *L. catocalaria*, Guenée, *l. c.* p. 62, New Zealand.

Acidalia atromarginata, Mabille, Bull. Soc. Ent. Fr. 1868, p. lxxxix and *A. honestata*, Mabille, ibid., Corsica (diagnoses only).

Eupithecia nepetata, Mabille, *l. c.* p. xc, *E. achilleata*, Mabille, ibid., Corsica (diagnoses only), and *E. goossensiata*, Mabille, ibid., Paris (no description).

Eupithecia cidariaria, Guenée, *l. c.* p. 62, New Zealand.

Coremia ardularia and *C. inamœnaria*, Guenée, *l. c.* p. 63, *C. ypsilonaria* and *C. pastinaria*, Guenée, *l. c.* p. 64, New Zealand.

Camptogramma fuscinata and *C. stinaria*, Guenée, *l. c.* p. 92, New Zealand.

Cidaria pyramaria, Guenée, *l. c.* p. 93, *C. bulbulata* and *C. delicatulata*, Guenée, *l. c.* p. 94, New Zealand.

Pyralidæ.

Zeller (Verh. zool.-bot. Ges. in Wien, xviii. pp. 592–599) gives a list of Carinthian species of this family, with notes of more or less general interest upon the following species:—*Hercyna alpestralis*, *Botys trigutta* (synonymy), *B. cingulata*, *B. accolalis*, *B. fuscalis*, *B. flavalis*, *B. cerealis*, var.? *opacalis*, *Scoparia ingratella* (perhaps=*majalis*, Scop.), *S. manifestella*, *Crambus myellus*, *C. luctiferellus*, *Pempelia ornatella*, *Hypochalcia ahenella* (var.?), *Myelois legatella*.

Botys magnomaculalis (Motsch.). Ballion remarks upon the inadmissibility of this name. Stett. ent. Zeit. 1868, p. 169.

Scoparia zelleri (Wocke) is recorded as British by G. J. Hearder and H. G. Knaggs. Ent. M. Mag. v. p. 131. See also Pryer, *l. c.* p. 149.

Ilythia colonella and its pupa are figured by Packard, Amer. Natural. ii. p. 335, fig. 2.

Crambus myellus (Hübn.) is figured by Knaggs, Ent. Ann. 1869, front. fig. 3.

Millière (Ann. Soc. Linn. Lyon, n. s. xv.) describes and figures the larva and imago of *Hypotia corticalis* (W. V.), *l. c.* p. 202, pl. 82. figs. 3, 4; the transformations of *Eromene bella* (Hübn.), *l. c.* p. 219, pl. 83. figs. 10–12; and the imago only of *Crambus staudingeri* (Zell.), *l. c.* p. 212, pl. 83. fig. 1, and *C. argentarius* (Staud.), *l. c.* p. 215, pl. 83. fig. 3.

Melissoblaptes bipunctanus (Zell.). Zeller (Stett. ent. Zeit. 1863, pp. 413–416) notices the natural history of this species, the larva of which appears to be partial to animal food, although Zeller could not ascertain that this is its regular nourishment. He believes that *M. bipunctanus* will prove to be identical with *anellus* (W. V.).

Crambus pratorum (Fab.). O. Hofmann describes the transformations of this species (Stett. ent. Zeit. 1868, p. 32).

The larva of *Odontia dentalis* is described by Newman, Entomologist, 1868, pp. 158–159.

Herminia cribralis (Hübn.). Goossens notices the habits of this species. Bull. Soc. Ent. Fr. 1868, p. lxxviii.

Lindemann has published an account of the appearance of great quantities of the larva of *Botys sticticalis* in the Russian Government of Toula in 1867. Gazette Agricole, St. Petersburg, November 1867; Horæ Soc. Ent. Ross. v. Rev. Bibl. ii. pp. ii–iv.

Crambus lugdunellus, sp. n., Millière, *l. c.* p. 213, pl. 83. fig. 2, Lyons.

Ephestia gnidiella, sp. n., Millière, *l. c.* p. 216, south of France and Spain.

Eudorea staudingeralis, sp. n., Mabille, Bull. Soc. Ent. Fr. 1868, p. lxxxix, Corsica (diagnosis only).

Ennychia minutalis, sp. n., Speyer, Stett. ent. Zeit. 1868, p. 111, Aargau.

Tortricidæ.

Eupœcilia. MacLachlan has published (Ent. Annual, 1869, pp. 83–93) a discussion of the British species of this genus, of which he admits 22. The following synonyms are indicated:—

1. *E. sodaliana* (Haw.) = *amandana* (H.-Sch.); 2. *E. carduana* (Zell.) = ? *hybridella* (Hübn.) (if this identification be confirmed the second name has the priority); 3. *E. atricapitana* (Steph.) = *venustana* (Schläg.); 7. *E. angustana* (Hübn.) = *cruentana* (Fröl.); 9. *E. ambiguella* (Hübn.) = *roserana* (Tr.); 10. *E. nana* (Haw.) = *pumilana* and *pallidana* (H.-Sch.) = *ambiguana* (Fröl.). 13. *E. vectisana* (Westw.) = *geyeriana* (H.-Sch.); 15. *E. rupicola* (Curt.) = *humidana* (H.-Sch.); 16. *E. subroseana* (Haw.) = *phaleratana* (H.-Sch.); 17. *E. heydeniana* (H.-Sch.) = *implicitana* (Zell.) = *subroseana* (Wilk.); 18. *E. roseana* (Haw.) = *dipsaceana* (Zell.); 21. *E. ciliella* (Hübn.) = *rubellana* (Hübn.) = *rufociliana* (Haw.).

Pædisca grandævana (Lind.) = *Phal. cana* (Scop.), according to Zeller, Stett. ent. Zeit. 1868, pp. 132–133. Scopoli's species has hitherto been identified with *maurana* = *brunderiana* (Linn.).

Cochylis mussehliana of Staudinger = *griseana* or *udana* of British entomologists. H. Burney, Entomologist, iv. p. 19.

Zeller (Verh. zool.-bot. Ges. in Wien, xviii. pp. 599–605) publishes a list of species of this group collected by him in Carinthia, and gives notes, of more or less importance, on the following species:—*Tortrix ribeana*, *T. flavana*, *Conchylis cruentana* (probably double-brooded), *C. pallidana* (probably double-brooded), *C. rupicola*, *Grapholitha succedana*, *G. flexulana*, *Sericoris cespitana*, *Semasia modicana*.

Barrett notices the habits of *Penthina marginana*, and is inclined to think, from peculiarities in its time of appearance, that two species are confounded under this name. He thinks that the double-broodedness of *Argyrolepia*

dubrisana is due to retarded development, as also the long-continued intermittent appearance of *Eupœcilia subroseana*. Ent. M. Mag. iv. pp. 181–182.

A. Hartmann records (Stett. ent. Zeit. 1868, pp. 109–110) the following species of this family as bred by him from the juniper:—*Conchylis rutilana*, *Grapholitha latiorana*, *G. duplicana*.

Barrett refers to the habits of *Retinea turionana* and some other pinivorous species. Ent. M. Mag. v. pp. 178–179.

Retinia turionella. Zeller indicates (Stett. ent. Zeit. 1868, p. 123) certain differences as occurring in specimens obtained by him from *Pinus mughus*, and referred by him to this species. He suggests the name *R. mughiana* if the form be regarded as distinct.

Retinia berolina. Tuely notices the habits of this species, Entomologist, iv. p. 17.

Bond records the observation by Knaggs of a ♂ *Tortrix viridana* and a ♂ *T. heparana* simultaneously in union with a ♀ *T. viridana* (Proc. Ent. Soc. Lond. 1868, p. xxvii).

Dictyopteryx forskaleana. The pupation of this species is described by Healy, Ent. M. Mag. iv. p. 184.

Eupœcilia subroseana. Barrett discusses some points in the life-history of this species. Ent. M. Mag. iv. p. 256.

Frauenfeld publishes (Verh. zool.-bot. Ges. in Wien, xviii. pp. 417–424) some further remarks on the moth which has of late inflicted so much injury on the cotton-crops in Egypt. His observations are founded upon and include a report on the subject by Ivanovich, who seems inclined to regard the author of the mischief as quite distinct from *Earias siliquana*.

Halias clorana. Jourdheuille notices the injury done to plantations of osiers by the larva of this species. Ann. Soc. Ent. Fr. 4ᵉ sér. viii. p. 320.

Coret notices the injury done to Vines at Perteaux by the larva of *Tortrix roserana* (Fröhl.). Bull. Soc. Ent. Fr. 1868, p. xcix.

Tortrix rileyana, sp. n., Grote, Trans. Amer. Ent. Soc. ii. p. 121, United States.

Conchylis woliniana, sp. n., Schleich, Stett. ent. Zeit. 1868, p. 289, Island o Wollin and Sarepta (transformations described).

Liodes homochromata, sp. n., Mabille, Bull. Soc. Ent. Fr. 1868, p. lxxxix, Corsica (diagnosis only).

Tephrina binævata, sp. n., Mabille, *l. c.* p. lxxxix (diagnosis only), Corsica.

Eupœcilia degreyana, sp. n., M'Lachlan, Ent. Annual, 1869, p. 91, Norfolk.

Tineidæ.

Œcophora devotella (Heyd.). O. Hofmann describes (Stett. ent. Zeit. 1868, pp. 292–293) the structure of this species, which he says belongs neither to *Œcophora* nor to *Tinagma*, but approaches more nearly to *Calotrypis*. It agrees in the venation with *T. dentellum* and *profugellum* and *Œ. fulviguttella*, the first of which the author refers to *Calotypis*. The other three species have the inner margin of the anterior wings perfectly smooth, and thus want one of the most striking characters of that genus. For these species Hofmann proposes the formation of a new genus to be named *Heydenia*.

Stainton remarks (Trans. Ent. Soc. Lond. 1868, pp. 137–138) on the synonymy of *Tinea? alpicella*, which was described by him in 1851 and figured

by Herrich-Schäffer in the same year. In 1855 the latter, in describing the species, added descriptions of new specimens, showing the characters of the genus *Zelleria*; and these Stainton identified with *Z. fasciapennella* (Log.), under which name the insect was published by Frey. Stainton now regards it as distinct, and proposes for it the name of *Z. saxifragæ*.

Zeller (Stett. ent. Zeit. 1868) notices the following species:—*Depressaria annexella* = *ciliella* is probably a variety of *applana*; its natural history and that of *applana* are discussed in detail by Zeller (*l. c.* pp. 416–423); and *Tinagma balteolellum* (Fisch. v. R.) and its allies (*l. c.* pp. 423–427).

Butalis hornigii (Zell.). Zeller (*l. c.* p. 149) states that this species differs considerably in size in the two sexes.

Depressaria rhodochrella. T. De Grey suggests that this is only a variety of *D. subpropinquella*. Ent. M. Mag. v. p. 105.

Gelechia albifemorella (Hofm.). This species is described by Zeller (*l. c.* p. 141). It has been distributed by him under the MS. name of *G. calcinella*.

Frey publishes (Mitth. schw. ent. Gesellsch. ii. pp. 376–380) a continuation of his list of Swiss Tineidæ, including the genera *Depressaria*, *Philalocera*, *Theristis*, and *Cerostoma*, with 26, 1, 1, and 14 species respectively.

Zeller (Verh. zool.-bot. Ges. in Wien, xviii. pp. 605–627) publishes a list of species of this family collected by him in Carinthia, with notes upon the following species:—*Melasina lugubris*, *Talæporia pseudobombycella*, *Diplodoma marginepunctella*, *Lampronia luzella*, *Micropteryx anderschella*, *Plutella horticola*, *Depressaria* (notices of plants on which larvæ were observed), *D. assimilella* (var.?), *D. parilella* (vars.), *Symmoca albicanella* (= *signella*, H.-Sch.), *Gelechia tripunctella*, *G. continuella*, *G. quadrella*, *G. leucomelanella*, *G. triparella*, *G. ligulella*, *G. coronilella*, *G. servella*, *Butalis esperella*, *B. fallacella* (perhaps = *æneella*, Scop.), *Gracilaria interruptella*, *Ornix meleagripennella*, *Coleophora lineolea*, *C. silenella* (?), *Elachista apicipunctella*, *E. subocellea*, and *Cemiostoma laburnella*.

Symmoca. Zeller (Stett. ent. Zeit. 1868, pp. 135–141) characterizes the Alpine species of this genus, namely:—*S. signella* (Hübn.), *S. caliginella* (Mann), *S. albicanella* (Zell. *l. c.* p. 136) = *signella* (H.-Sch. ex parte) = *psecadia* (Mann), and *S. mendosella* (Hornig). He also describes two new species of the genus.

Stainton states (Proc. Ent. Soc. Lond. 1868, p. xiv) that the insect described by him as *Nemophora carteri* is a fabrication made by attaching the hind wings of a *Cerostoma* to the fore wings of a *Nemophora*.

Berce records a case of parthenogenesis in a *Solenobia* observed by Jourdheuille. Bull. Soc. Ent. Fr. 1868, p. lxiii.

A. Hartmann notices (Stett. ent. Zeit. 1868, pp. 109–110) the following Tineidæ observed by him as feeding on *Juniperus communis* in Bavaria:—*Ypsolophus marginellus* and *juniperellus*, *Argyresthia aurulentella*, and *Gelechia electella*.

Millière describes and figures the transformations of *Agdistis heydeni* (Zell.), Ann. Soc. Linn. Lyon, n. s. xv. p. 210, pl. 82. figs. 12–14, and a variety (*cannisella*, Mill.) of *Psecadia funerella* (Fab.), *l. c.* p. 199, pl. 81. fig. 13.

O. Hofmann (Stett. ent. Zeit. 1868, pp. 385–391) notices the natural history of the following species:—*Adela fibulella* (W. V.), larva in capsules of *Veronica chamædrys*; *A. violella* (Tr.) = *tombacinella* (H.-Sch.), larva in capsules of

Hypericum perforatum; *Metriotes modestella* (Dup.), larva in seeds of *Stellaria holostea*; *Gelechia carchariella* (Zell.), larva feeds on the leaves of *Vicia pisiformis* and *cassubica*, two of which it joins together by their upper surfaces; *G. pulveratella* (H.-Sch.), larvæ on *Coronilla varia* and *Medicago sativa*.

Gracilaria syringella. Healy has completed his life-history of this species. Ent. M. Mag. iv. pp. 175–177 and 197–199. See also Entomologist, iv. pp. 167–168.

Berce notices the habits of *Solenobia lichenella* (Zell.). Bull. Soc. Ent. Fr. 1868, pp. xlix–l. The natural history of this species is also referred to by Girard, *l. c.* p. li.

Diurnea fagella. The habits of this species noticed by E. Birchall, Entomologist, iv. pp. 77–78.

The life-history of *Chauliodus chærophyllellus* is described by Healy, Entomologist, iv. pp. 54–59.

Tischeria complanella. Goureau notices the habits of the larva of this species (Bull. Soc. Ent. Fr. 1868, p. xviii).

Tischeria complanella. Rondani describes and figures the larva of this species, which mines oak-leaves (Ann. Soc. Nat. Modena, iii. pp. 20–21, pl. 4. fig. 8). He also figures the legs and antenna of the imago (*l. c.* pl. 4. figs. 1–2½).

Lithocolletis klemannella. Goureau notices the habits of the larva of this species (Bull. Soc. Ent. Fr. 1868, p. xvii).

Chrysocorys festaliella. The pupation of this species is described by Healy, Ent. M. Mag. iv. p. 183.

Rogenhofer (Sitzsungsber. zool.-bot. Ges. in Wien, 1868, p. 7) remarks upon large webs produced by the larvæ of *Hyponomeuta*.

Girard notices the great damage done to the apples in the district of Brie by the larvæ of *Yponomeuta evonymella* and *padella* (Bull. Soc. Ent. Fr. 1868, p. lxi). According to Fallou the same larvæ have greatly injured the apples in the Department of the Oise (ibid. p. lxii).

Schleich (Stett. ent. Zeit. 1868, pp. 392–393) notices the habits of the larva of *Exæretia allisella*.

Schleich (Stett. ent. Zeit. 1868, pp. 393–394) notices the natural history of *Laverna phragmitella*, the larva of which lives upon the parenchyma of the leaf-sheaths of *Typha latifolia*, and not upon the seeds of that plant.

Gelechia costella. Healy notices the breeding of this species, and especially the emergence of the imago in December. Ent. M. Mag. iv. p. 260.

Stathmopoda pedella. On the habits of this species see Zeller, Ent. M. Mag. iv. p. 233.

Stathmopoda pedella (Linn.). O. Hofmann describes the transformations of this species (Stett. ent. Zeit. 1861, p. 33).

Lithocolletis bremiella feeds sometimes on *Orobus tuberosus*. Barrett, Ent. M. Mag. v. p. 22.

Elachista paludum. The larva feeds on carices, according to J. Sang, Ent. M. Mag. v. p. 78.

Venus publishes a detailed account of the mode of capture and setting of Microlepidoptera, with remarks on rearing them from the larvæ. Sitzungsber. Isis, 1867, pp. 116–126.

Heydenia, g. n., O. Hofmann, Stett. ent. Zeit. 1868, p. 293 (*vide suprà*). Sp. *T. dentellum* (Zell.), *profugellum* (Staint.), *Œc. devotellum* (Heyd.), and probably *Œ. statariella* (Heyd.).

New species :—

Micropteryx rablensis, Zeller, Stett. ent. Zeit. 1868, p. 133, near Raibl in Carinthia.

Scythropia petrobiella, Zeller, Verh. zool.-bot. Ges. in Wien, xviii. p. 607, Preth.

Gelechia aduncella, Zeller, *l. c.* p. 614, North America; *G. sarothamnella*, Zeller, *l. c.* p. 615, Meseritz; *C. nomadella*, Zeller, *l. c.* p. 616, Preth and Fiume; *G. sauteriella*, Zeller, *l. c.* p. 612, Königsberg.

Gelechia. Zeller (Stett. ent. Zeit. 1868) describes four new species of this genus from Raibl in Carinthia, namely, *G. laceratella*, *l. c.* p. 143, *G. alsinella*, *l. c.* p. 145, *G. saginella*, *l. c.* p. 146, and *G. trauniella*, *l. c.* p. 147.

Gelechia rumicetella, O. Hofmann, Stett. ent. Zeit. 1868, p. 28, near Prague.

Zelleria saxifragæ, Stainton, Trans. Ent. Soc. Lond. 1868, p. 139, Engadine.—*Zelleria phillyrella*, Millière, *l. c.* p. 194, pl. 81. figs. 6-8 (with metamorphoses), France.

Æchmia silerinella, Zeller, Verh. zool.-bot. Ges. in Wien, xviii. p. 619, Carinthia.

Coleophora conyzæ (Heinem. MS.), Zeller, *l. c.* p. 623, Preth and Jena.

Elachista immolatella, Zeller, *l. c.* p. 625, Raibl.

Nepticula dryadella, O. Hofmann, *l. c.* p. 29, near Oberaudorf, in the valley of the Inn.

Symmoca vitiosella, Zeller, Stett. ent. Zeit. 1868, p. 139, Asia Minor (Makri); *S. cedestiella*, Zeller, *l. c.* p. 140, Sarepta.

Epidola barcinonella, Millière, *l. c.* p. 221, pl. 83. figs. 13–15 (with metam.), Barcelona.

Pterophoridæ.

Schleich (Stett. ent. Zeit. 1868, p. 392) describes the metamorphosis of *Pterophorus lienigianus*, the larva of which lives on *Artemisia vulgaris*, in a closed dwelling, formed by bringing together the tips and margins of a leaf.

Pterophorus plagiodactylus. Millière's description of the larva of this species is abridged by Jordan, Ent. M. Mag. iv. p. 185.

Pterophorus inulæ (Zell.). Zeller (Stett. ent. Zeit. 1868, pp. 427–429) notices the natural history of this species.

Pterophorus hodgkinsonii, sp. n., Gregson, Ent. M. Mag. iv. p. 178, Witherslack.

DIPTERA.

A. *Separate Works.*

Bonnet, G. Mémoire sur la Puce pénétrante ou Chique. Paris, 1867, with 2 plates.

The Recorder has not seen this work, which is referred to by Guyon.

Schiner, J. R. Reise der œsterreichischen Fregatte Novara um die Erde. Zoologischer Theil. Diptera, pp. vi & 388, with 4 plates, 1868.

In this important work Schiner gives a list of all the species of Diptera brought home by the zoologists of the 'Novara,' and he justly calls attention to the great quantity of material belonging to this usually neglected order, which was brought together and almost entirely collected by them. Under most of the families Schiner gives a list and brief discussion of the established genera, indicating those which he considers well founded, and remarking also in many instances upon their geographical distribution.

Winnertz, Johann. Beitrag zu einer Monographie der Sciarinen. Herausgegeben von der k.-k. zool.-bot. Gesellschaft in Wien, pp. 187, 1 plate: 1867.

In this elaborate memoir Winnertz furnishes us with a monograph of the European species of the *Sciarinæ*, which he regards as exhibiting "a type so different from that of the Mycetophilidæ that a union of these two groups must appear inadmissible."

B. *Papers published in Journals.*

Damianitsch, R. Ueber die Metamorphose des *Xylophagus ater* (Fab.). Verhandl. zool.-bot. Gesellsch. in Wien, Band xviii. pp. 117–118.

Fedtschenko, A. P. Materialien zu einer entomologischen Fauna der Gouvernements des Moskauer Lehrbezirks. Verzeichniss der zweiflüglichen Inseckten. Nachrichten der kais. Gesellsch. der Liebhaber der Naturkunde, Band iv. Moscow, 1868.

This paper, which the Recorder has not seen, but which is noticed in Horæ Soc. Ent. Ross. v. Rev. Bibl. pp. iv–xii, contains a catalogue of 1227 species of Diptera found in the district of Moscow, with statements of the times and localities of their occurrence. The author also institutes a comparison between the Diptera of the Moscow district and those of Sweden, and gives a tabular analysis of the monthly distribution of the families. The work, and especially the more general part of it, is not favourably spoken of in the 'Horæ Entomologicæ.' It is written in Russian.

Frauenfeld. (See "Insecta.")

Gerstäcker, A. Systematische Uebersicht der bis jetzt bekannt gewordenen Mydaiden (*Mydasii*, Latr.). Stettiner entom. Zeitung, 1868, pp. 65–103, plate 1.

Guyon, —. Histoire Naturelle et Médicale de la Chique (*Rhynchoprion penetrans*, Oken), Insecte parasite des ré-

gions tropicales des deux Amériques. (Suite.) Rev. et Mag. de Zool. 1868, pp. 25–35, 70–84, 101–107, 171–182, 245–251, 301–308, & 433–435.

Higginson, Alfred. Observed facts in the natural history of *Chironomus plumosus*. Proc. Liverpool Lit. & Phil. Soc. no. xx. pp. 174–177 : 1866.

Kowarz, Ferdinand. Dipterologische Notizen. II. Verhandl. zool.-bot. Gesellsch. Wien, xviii. pp. 213–222.

Loew, H. Die europäischen Arten der Gattung *Micropeza*. Berliner entom. Zeitschr. 1868, pp. 161–167.

——. Ueber *Empis albicans*, Meig., und eine derselben nahe verwandte Art. Berl. entom. Zeitschr. 1868, pp. 168–175.

——. Ueber *Empis nitida*, Meig., und die ihr verwandten Arten. Berliner entom. Zeitschr. 1868, pp. 231–240.

——. Nachträgliches über den Verwandtschafts-Kreis von *Empis albicans*. Ibid. pp. 387–393.

——. Die europäischen Ortalidæ. Zeitschr. für die gesammten Naturwiss. xxxii. pp. 1–11, and Nachtrag, p. 191.

——. Berichtigung der generischen Bestimmung einiger fossilen Dipteren. Ibid. pp. 180–191, Tafel v.

——. Cilicische Dipteren und einige mit ihnen concurrirende Arten. Berliner entom. Zeitschr. 1868, pp. 369–386.

Rondani, Camillo. Diptera aliqua in America meridionali lecta a Prof. S. Strobel annis 1866 et 1867. Annuario della Soc. dei Naturalisti in Modena, anno iii. pp. 24–40, pl. 4.

Contains a list of Diptera collected chiefly in the Southern States of South America by Strobel, with descriptions of new species.

——. Diptera Italica non vel minus cognita, descripta vel annotata, observationibus nonnullis additis. Fasc. iii. Atti della Soc. Ital. di Sci. Nat. vol. xi. pp. 21–54 : June 1868.

Species belonging to the families Œstridæ, Syrphidæ, Conopidæ, and Muscidæ, either new or new to the Italian fauna.

——. Sciomyzinæ Italicæ collectæ, distinctæ et in ordinem dispositæ. Ibid. pp. 199–256 : October 1868.

This paper consists of a tabular synopsis of the Italian Sciomyzinæ, and contains the diagnoses of a considerable number of new species. It is the second fasciculus of the seventh part of Rondani's 'Dipterologiæ Italicæ Prodromus.'

Schiner, J. R. Schlussbericht über die von der Weltumseglungsreise der k. Fregatte Novara mitgebrachten Dipteren. Verhandl. zool.-bot. Ges. Wien, xviii. pp. 559–562.

Schiner, J. R. Miscellen. Ibid. pp. 909–922.
The first half of this paper is devoted to Diptera, the second to Arachnida.

Verrall, G. H. Notes on some British Syrphi. Ent. Monthly Mag. vol. v. pp. 7–8.

Winnertz, J. Acht neue Arten der Gattung Sciara. Verhandl. zool.-bot. Gesellsch. Wien, Band xviii. pp. 533–540.

C. *Anatomical and Physiological Paper.*

Künckel, Jules. Recherches sur l'organisation et le développement des Diptères du genre Volucelle. Comptes Rendus, tome lxvii. pp. 1231–1234. Abstract in Ann. & Mag. Nat. Hist.

Schiner (Verh. zool.-bot. Ges. in Wien, xviii. pp. 559–562) concludes his general report on the Diptera collected during the voyage of the 'Novara.' The total number of species brought is 922, of which 467, or more than half, proved to be undescribed. In 1864 Schiner estimated the number of described species of Diptera at 19,449 (viz. 8670 European, 2046 Asiatic, 1644 African, 5517 American, 1056 Australian species, and 516 species of unknown origin). Since 1864 the number of known species has been increased 1341, making nearly 20,800 at the end of 1867. Schiner expresses his conviction that this is not a tenth part of the whole number of existing species.

With regard to his classification of Diptera Schiner suggests (*l. c.* p. 560) that the section of the *Diptera clyclorhapha* should commence with the *Polyneura* and close with the less highly organized *Oligoneura*.

Frauenfeld (Verh. zool.-bot. Ges. in Wien, xviii. p. 292) gives a list of 39 species of Diptera collected by him upon the Nicobars, where, he considers, this order is the most abundantly represented of all. One half the species collected belong to the Muscidæ. Three-fifths of the species were undescribed.

Walker furnishes a list of a few species of Diptera found in Vancouver's Island, in the Appendix to Lord's 'Naturalist in Vancouver's Island and British Columbia' (vol. ii. p. 337).

Boisduval (Ent. Hortic. pp. 593–631) notices some of the principal garden-Diptera, and indicates their general habits. The Syrphidæ are noticed as enemies to the Aphides.

Cecidomyidæ.

Schiner (Reise der Novara, Dipt. p. 3) gives a list of the described genera of this family, and asserts that *Oligotrophus* (Lat.), *Rhabdophaga* (Westw.), and *Dasyneura* (Rond.) belong to *Cecidomyia*; *Brachyneura* (Rond.) = *Spaniocera* (Winn.); *Contarinia* + *Bremia* + *Phytophaga* (Phil.) =

Diplosis (Loew); *Phyllophaga* (Rond.) = *Asphondylia* (Loew); *Angelinia* (Rond.) = *Hormomyia* (Loew); *Porricondyla* (Rond.) = *Epidosis* (Loew); *Winnertzia* (Rond.) = *Asynapta* (Loew); *Oziorhincus* (Rond.) = *Clinorhyncha* (Loew); *Micromyia* (Rond.) = *Campylomyza* (Meig.); *Mimosciara* (Rond.) = *Lestremia* (Meig.); *Macrostyla* (Winn.) = *Catocha* (Hal.); *Dirhiza* and *Cecidogona* (Loew) probably belong respectively to *Epidosis* and *Lestremia*. The genera *Psychophæna*, *Spaniotoma*, *Pentaneura*, and *Tetraphora* (Phil.) are referred by Schiner to the Chironomidæ. Schiner remarks upon the geographical distribution of the known species of these genera, amounting in all to 348, of which only 30 are extra-European. The 'Novara's' voyage furnished 12 new species of this family, of nearly all which Fraunfeld was able to observe the metamorphoses.

Frauenfeld (Verh. zool.-bot. Ges. in Wien, xviii. p. 162) notices the metamorphoses of *Asphondylia verbasci* (Vill.) and *Cecidomyia lathyri* (Frauenfeld).

Cecidomyia destructor is figured, with its transformations, in Amer. Natural. ii. p. 163, fig. 1.

On the Wheat-midge, see Walsh, Pract. Entom. ii. pp. 99–101.

A species of this family is considered by Walsh to be the cause of swellings in the joints of straw; its larva is hence known as the "joint-worm" (Pract. Entom. i. pp. 10–12). It is afterwards identified by Walsh with *Cecidomyia destructor* (*l. c.* p. 37).

Sanborn notices a larva belonging to this family found feeding in companies of from 30 to 40 on the pitch exuding from wounds in the bark of *Pinus rigidus* (Proc. Bost. Soc. Nat. Hist. xii. p. 93).

Kidd describes the gall of *Cecidomyia ulmariæ* (Bremi). Ent. M. Mag. iv. p. 233.

New species :—

Heteropeza transmarina, Schiner, Reise der Novara, Zool. Dipt. p. 5, pl. 1. fig. 1, Sydney.

Lasioptera bryoniæ, Schiner, *l. c.* p. 5, Madras; *L. lignicola*, Schiner, *l. c.* p. 6, *L. carbonaria*, Schiner, ibid., and *L. salviæ*, Schiner, *l. c.* p. 7, Cape of Good Hope.

Cecidomyia frauenfeldi, Schiner, *l. c.* p. 7, Sydney; *C. capensis*, Schiner, ibid., *C. deformans*, Schiner, *l. c.* p. 8, Cape of Good Hope.

Cecidomyia aceris, Shimer, Trans. Amer. Ent. Soc. i. p. 281, Illinois.

Asphondylia rubescens, Schiner, *l. c.* p. 8, and *A. mesembrianthemi*, Schiner, *l. c.* p. 9, Cape of Good Hope.

Campylomyza sidneyensis, Schiner, *l. c.* p. 9, Sydney.

Mycetophilidæ.

Schiner (Reise der Novara, Dipt. pp. 9–10) remarks upon the genera belonging to this family, and upon its geographical distribution. He refers *Molobrus* (Lat.), *Planetes* (Walk.), and *Planetella* (Westw.) to *Sciara*, and states that *Agaricobia* (Phil.) = *Acnemia* (Winn.); *Pachypalpus* (Staeg.) = *Cordyla* (Meig.); *Macroneura* (Macq.) = *Diadocidia* (Ruthe); *Messala* (Curt.) = *Bolitophila* (Meig.); *Symmerus* (Walk.) + *Centrocnemis* (Phil.) = *Plesiastina* (Winn.); and *Macrorrhyncha* (Winn.) = *Asindulum* (Lat.). Schiner accepts 48 genera, which he arranges under two primary groups, *Sciarina*

and *Mycetophilina*, the latter again divided into 7 subgroups. The total number of known species amounts to 694 (Schiner describes 6 new species, which do not appear to be taken into the account here), of which 571 belong to the European fauna, and 123 are exotic (America 105, Africa 5, Asia 7, Australia 5, unknown 1). The only established exotic genera which are not represented in Europe are *Cnephæophila* (Phil.), *Dionomus* (Walk.), and *Platyroptylon* (Westw.). To these must be added Schiner's *Pseudosciara*, the only species of which is from Columbia.

Rhyphus, regarded by Schiner as the type of a distinct family, includes 11 described species (5 European, 5 American, and 1 Australian). Two new species from Brazil and New Zealand are described by Schiner (*l. c.* p. 48).

Sciarinæ. Winnertz in his monograph of this group gives the following table of the genera admitted by him (p. 11) :—

A. Flagellar joints of antennæ cylindrical, pedunculated or not pedunculated.
1. Wings longer than abdomen, their surface microscopically hairy ; wing-lobes more or less developed ; joints of antennæ hairy. SCIARA (Meig.).
2. Wings as in *Sciara*, but their surface distinctly hairy. TRICHOSIA, g. n.
3. Wings as in *Sciara* ; cubitus united with the costal by a radial vein. CRATYNA, g. n.
4. Wings claviform, their surface microscopically hairy ; antennæ of ♂ pedunculate, with whorls of hairs ..... CORYNOPTERA, g. n.
5. Wings narrow, shorter than abdomen, their surface microscopically hairy ..... BRADYSIA, g. n.
6. Wings and halteres wanting ..... EPIDAPUS (Hal.).

B. Flagellar joints of antennæ ovate and with long stalks in ♂, cylindrical and without stalks in ♀.
7. Wings as in *Sciara*, but the large fork enlarged at the base and its branches undulated ..... ZYGONEURA (Meig.).

By far the greater number of the species (173 out of 186) belong to the old genus *Sciara*, of which, indeed, the others are for the most part but dismemberments.

Plesiastina annulata (Meig.) and *P. apicalis* (Winn.) are ♂ and ♀ of the same species, according to Kowarz, Verh. zool.-bot. Ges. in Wien, xviii. p. 213.

New genera and species :—

Pseudosciara, g. n., Schiner, Reise der Novara, Zool., Dipt. p. 13. Allied to *Sciara*. Sp. *P. hirtella*, sp. n., Schiner, *l. c.* p. 14, Columbia.

Trichosia, g. n., Winnertz, *l. c.* p. 173. (See Table above.) Sp. n. *T. splendens*, Winn. *l. c.* p. 173, Black Forest; *T. absurda* (Heyd. MS.), Winn. *l. c.* p. 174, Rigi ; *T. modesta*, Winn. *l. c.* p. 175, Scheveningen.

Cratyna, g. n., Winnertz, *l. c.* p. 176. (See Table above.) Sp. *C. atra*, sp. n., Winn. *l. c.* p. 176.

Corynoptera, g. n., Winnertz, *l. c.* p. 177. (See Table above.) Sp. *Zygoneura gracilis* and *Z. pumila* (Winn.). Sp. n. *C. perpusilla*, Winn. ibid., *C. minutula*, Winn. *l. c.* p. 178.

Bradysia, g. n., Winnertz, *l. c.* p. 180. (See Table above.) Sp. n. *B. an-*

gustipennis (Heyd. MS.), Winn. ibid., Frankfort; *B. pumila*, Winn. *l. c.* p. 181, Louisberg; and *B. heydeni*, Winn. ibid., Engadine.

Sciara. Of this genus Winnertz (Monogr. Sciarinen) describes 173 species, of which 145 are new. A mere list of the names of these species would manifestly be useless, as Winnertz's work must be consulted by every one studying the European *Sciarinæ*. A table to facilitate the determination of the species will be found at pp. 168–173.

Sciara. Winnertz (Verh. zool.-bot. Ges. in Wien, xviii.) describes the following new species of this genus:—*S. dispar*, p. 533, *S. saltuum*, p. 534, from the Tatra; *S. procera*, p. 535, Podolia; *S. unicolor*, p. 536, from the Tatra; *S. vagans*, p. 537, Krakau; *S. serena*, p. 538, Podolia; *S. mœrens*, p. 539, and *S. brevipalpis*, p. 540, from the Tatra.

Sciara. Schiner (Reise der Novara, Zool., Dipt.) describes the following new species of this genus:—*S. vespertilio*, *l. c.* p. 12, South America; *S. striatipennis*, ibid., Columbia; *S. pygophora*, *l. c.* p. 13, Columbia; *S. leptogaster*, ibid., Columbia.

Sciophila americana, Schiner, *l. c.* p. 14, South America.

Ryphus guttatus, Schiner, *l. c.* p. 48, Brazil; *R. neozelandicus*, Schiner, *l. c.* p. 49, New Zealand.

Simuliidæ.

According to Schiner (Reise der Novara, Dipt. p. 15) the total number of described species of *Simulia* is 47, distributed as follows:—Europe 27, America 17, Africa 1, and Australia 2.

Simulia australensis, sp. n., Schiner, *l. c.* p. 15, Auckland.

Bibionidæ.

Schiner (Reise der Novara, Dipt. pp. 16–17) remarks upon the genera and geographical distribution of this family. Of the genera hitherto referred to it he removes *Heptagyra* (Phil.) to the Chironomidæ, and combines the following genera—*Arthria* (Kirby) with *Aspistes* (Meig.), *Spodius* (Loew) with *Hesperinus* (Walk.), and *Acanthocnemis* (Blanch.) with *Dilophus* (Meig.); and remarks that *Plecia* (Wied.) and *Crapitula* (Gimm.) might advantageously be united with *Penthetria* (Meig.). *Lobogaster* (Phil.) is referred to the Bibionidæ by Schiner. Of the 218 described species of this family, 77 are European and 141 exotic; but Schiner considers that the latter number is probably much increased by our imperfect knowledge of the natural history of the exotic species. Of the described exotic species, 108 inhabit America, 12 Africa, 12 Asia, and 9 Australia. Schiner adds 9 new species, 8 from America and 1 from Australia.

New species:—

Bibio subæqualis, Rondani, Ann. Soc. Nat. Modena, iii. p. 39, Buenos Ayres.

Dilophus similis, Rondani, *l. c.* p. 40, Buenos Ayres.

Dilophus tapir, Schiner, Reise der Novara, Zool., Dipt. p. 18, *D. lucifer*, Schiner, *l. c.* p. 18, and *D. pictus*, Schiner, *l. c.* p. 19, Columbia.

Bibio superfluus, Schiner, *l. c.* p. 20, Columbia; *B. helioscops*, Schiner, ibid., Sydney; *B. dispar*, Schiner, ibid., Columbia.

Plecia imperialis, Schiner, *l. c.* p. 22, Columbia.

Hesperinus conjungens, Schiner, *l. c.* p. 23, Brazil.
Lobogaster philippii, Schiner, *l. c.* p. 23, Chili.

Chironomidæ.

Schiner (Reise der Novara, Zool., Dipt. pp. 23–25) discusses the geographical distribution of the species of this family, and the genera under which they have been arranged. *Psychophæna*, *Spaniotoma*, *Pentaneura*, *Tetraphora*, and *Heptagyra* (Phil.) are referred here by Schiner, who, however, pronounces no opinion as to their stability. *Psilocerus* (Ruthe) is said to be identical with *Hydrobænus* (Fries), *Thalassomyia* (Schin.) is reunited with *Chironomus*, and *Labidomyia*, *Palpomyia*, *Prionomyia*, and *Sphæromyas* (Steph.), and *Culicoides* (Lat.), with *Ceratopogon*. The 16 genera recognized by Schiner include 669 described species, of which Europe possesses 551, America 93, Africa 5, Asia 13, and Australia 7. Schiner describes 4 new species.

Blephariceridæ. To his family Blephariceridæ, which must be noticed here, Schiner (*l. c.* p. 27) refers the genera *Blepharicera* (Macq.) and *Apistomyia* (Bigot), combining with the former *Asthenia* (Westw.) and *Liponeura* (Loew.).

Packard (Amer. Natural. ii. p. 277) notices a species of *Chironomus*, the larvæ of which were dredged from the bottom of Salem Harbour. He figures the pupa, the foot of the larva, and the perfect insect (*l. c.* figs. 1, 1*a*, & 2).

Telmatogeton, g. n., Schiner, Reise der Novara, Zool., Dipt. p. 25. Allied to *Chironomus*. Sp. *T. st. pauli*, sp. n., *l. c.* p. 25, Island of St. Paul.

Paltostoma, g. n., Schiner, *l. c.* p. 27. Allied to *Blepharicera*, but with a forked cubital vein, and much elongated proboscis. Sp. *P. superbiens*, sp. n., Schiner, *l. c.* p. 28, South America.

Chironomus lindygii, sp. n., Schiner, *l. c.* p. 26, Columbia.
Tanypus manilensis, sp. n., Schiner, *l. c.* p. 26, Manilla.
Ceratopogon rhynchops, sp. n., Schiner, *l. c.* p. 26, Sydney.

Psychodidæ.

Schiner (Reise der Novara, Dipt. pp. 28–29) states that *Trichoptera* (Meig.) = *Psychoda* (Lat.); *Saccopteryx* (Hal.) = *Ulomyia* (Walk.); *Phalænomyia* (Loew) = *Trichomyia* (Hal.); *Posthon* (Loew) = *Sycorax* (Hal.); *Hæmasson* (Loew) and *Cynyphes* (Costa) = *Phlebotomus* (Rond.); and *Nygmatodes* (Loew) = *Neuropalpus* (Macq.). The family includes 30 described species (Europe 19, America 9, Africa 2).

Pericoma nigropunctata, sp. n., Schiner, *l. c.* p. 29, origin not stated.

Culicidæ.

Schiner (Reise der Novara, Dipt. p. 30) refers to the genera of this family, and states that 132 species belonging to it have been described, of which 30 inhabit Europe, 61 America, 21 Asia, 10 Africa, and 9 Australia, the origin of one species being unknown.

Culex pinguis, sp. n., Walker, Lord's Naturalist in Vancouver's Island &c. ii. p. 337, Vancouver's Island.

Ædes sapphirinus, sp. n., Osten-Sacken, Trans. Amer. Ent. Soc. ii. p. 47, Washington (D. C.) and New York

Corethra manilensis, sp. n., Schiner, Reise der Novara, Zool., Dipt. p. 30, Manilla.

Tipulidæ.

Schiner (Reise der Novara, Dipt. pp. 32–34) remarks upon the genera of this family, and upon its geographical distribution. He combines *Nematocera* (Meig.) with *Anisomera* (Meig.), *Nematocera* (Wied.) with *Megistocera* (Wied.), *Aporosa* (Macq.) and *Plettusa* (Phil.) with *Geranomyia* (Hal.), *Hemicteina* (Westw.) with *Ozodicera* (Westw.), *Anoplistis* (Westw.) with *Gynoplistia* (Westw.), *Ozocera* (Westw.) with *Cerozodia* (Westw.), *Hexatoma* (Lat.) and *Perenocera* (Curt.) with *Anisomera* (Meig.), *Helius* and *Megarhina* (St. Farg.) and *Leptorhina* (Steph.) with *Rhamphidia* (Meig.); *Cremobia* (Kol.) = *Amalopis* (Hal.); *Arhenica* (O.-Sack.) and *Physecrania* (Bigot) = *Eriocera* (Macq.); *Prionocera* (Loew) = *Stygeropis* (Loew); *Ctedonia* (Phil.) = *Gynoplistia* (Westw.); *Polymoria* (Phil.) = *Pœcilostola* (Schin.); *Idioneura* (Phil.) = *Dicranophragma* (O.-Sack.); and *Molophilus* (Curt.) = *Erioptera* (Meig.). *Glochina* (Meig.) and *Dicranomyia* (O.-Sack.) cannot be separated from *Limnobia*. *Pterolachisus* (Rond.) = *Tipula*; and *Limonia* (Lat.) contains a mixture of species. Brullé's genera *Xiphidia* and *Dictenidia* are provisionally united by Schiner with *Ctenophora*. Schiner admits 69 well-founded genera, including 913 described species, of which 380 are European, 358 American, 84 Asiatic, 40 African, and 51 Australian, whilst the origin of 6 exotic species is unknown.

Dixa. Schiner (*l. c.* p. 48) regards this genus as the type of a distinct family, which he names *Dixidæ*. It includes 20 known species, 13 European and 7 American.

Higginson has published a short account of the natural history of *Chironomus plumosus* (Proc. Liverp. Lit. Phil. Soc. xx. pp. 174–177).

New genera and species:—

Cloniophora, g. n., Schiner, Reise der Novara, Zool., Dipt. p. 40 (= *Cerozodia*, Westw. ?). Allied to *Gynoplistia*. Sp. *Gynoplistia subfasciata* (Walk.).

Paratropesa, g. n., Schiner, *l. c.* p. 44. Allied to *Limnobia*. Sp. *P. singularis*, sp. n., Schiner, *l. c.* p. 46, Columbia.

Peripheroptera, g. n., Schiner, *l. c.* p. 47. Allied to *Limnobia*. Sp. *P. nitens*, sp. n., Schiner, *l. c.* p. 47, Columbia.

Pachyrhina lucida, Schiner, Reise der Novara, Zool., Dipt. p. 34, Madeira.

Tipula. Schiner describes the following new species of this genus:—*T. eluta*, *l. c.* p. 35, Brazil; *T. graphica*, *l. c.* p. 36, South America; *T. frauenfeldi*, *l. c.* p. 36, Chili; and *T. novaræ*, *l. c.* p. 37, Auckland.

Ptilogyna picta, Schiner, *l. c.* p. 38, Sydney.

Gynoplistia melanopyga, Schiner, *l. c.* p. 39, Sydney.

Epiphragma histrio, Schiner, *l. c.* p. 41, Columbia.

Limnophila metallica, Schiner, *l. c.* p. 41, Sydney.

Penthoptera fuliginosa, Schiner, *l. c.* p. 42, Columbia.

Trimicra antarctica, Schiner, *l. c.* p. 42, St. Paul; *T. st. pauli*, Schiner, *l. c.* p. 43, St. Paul; *T. sydneyensis*, Schiner, ibid., Sydney.

Rhamphidia aberrans, Schiner, *l. c.* p. 43, South America.

Teucholabis spinigera, Schiner, *l. c.* p. 44, Columbia.

Limnobia diva, Schiner, *l. c.* p. 46, Brazil; *L. vicarians*, Schiner, ibid., Auckland; *L. morionella*, Schiner, *l. c.* p. 47, South America.

Limnobia pannonica, Kowarz, Verh. zool.-bot. Ges. in Wien, xviii. p. 213, Losoncz.

Stratiomyidæ.

Schiner (Reise der Novara, Dipt. pp. 50–52) remarks upon the genera of this family, with which he unites *Beris* and its allies. *Vappo* (Lat.)= *Pachygaster* (Meig.); *Ptilocerina* (Macq.)=*Ptilocera* (Westw.); *Cyclogaster* (Macq.)=*Lasiopa* (Brullé); and *Chlorisoma* (Rond.)=*Microchrysa* (Loew). Of this family as limited by him he recognizes 636 previously described species, thus distributed:—in Europe 136, in America 298, in Asia 104, in Africa 57, and in Australia 31; the habitats of 10 species are unknown. America constitutes the head quarters of the group, both as regards the number and diversity of forms; and some subordinate groups peculiar to America are indicated by Schiner.

New genera and species:—

Euryneura, g. n., Schiner, Reise der Novara, Zool. Dipt. p. 56. Allied to *Clitellaria*. Sp. *E. fascipennis*, Fab.; *E. propinqua*, sp. n., Schiner, *l. c.* p. 57, Columbia.

Histiodroma, g. n., Schiner, *l. c.* p. 68. Allied to *Basentidema*. Sp. *Sargus inermis* (Wied.).

Stratiomyia pyrrhocera, Loew, Berl. ent. Zeitschr. 1868, p. 370, and *S. sublunata*, Loew, ibid., Cilicia.

Cyphomyia picta, Schiner, Reise der Novara, Zool., Dipt. p. 53, South America; and *C. dispar*, Schiner, *l. c.* p. 54, Columbia.

Nemotelus gadensis, Schiner, *l. c.* p. 56, Gibraltar.

Cyanauges ruficornis, Schiner, *l. c.* p. 54, Chile.

Clitellaria aberrans, Schiner, *l. c.* p. 54, Auckland.

Odontomyia. Schiner describes the following new species of this genus:—*O. araneifera*, *l. c.* p. 58, Chili; *O. staurophora*, *l. c.* p. 59, Hongkong; *O. australensis*, *l. c.* p. 59, New Zealand; *O. sydneyensis*, *l. c.* p. 60, Sydney; *O. pachycephala*, ibid., Columbia.

Microchrysa dispar, Schiner, *l. c.* p. 61, South America.

Sargus mandarinus, Schiner, *l. c.* p. 62, Hongkong.

Chrysonotus splendens, Schiner, *l. c.* p. 62, South America; *C. dichrous*, Schiner, ibid., Columbia.

Merosargus cingulatus, Schiner, *l. c.* p. 62; *M. antennatus*, Schiner, *l. c.* p. 63, South America; *M. frontatus*, Schiner, ibid., Columbia; *M. bituberculatus*, Schiner, *l. c.* p. 64, South America.

Ptecticus, Schiner describes the following new species of this genus:—*P. illustris*, *l. c.* p. 64, South America; *P. affinis*, *l. c.* p. 65, South America; *P. australis*, ibid., Nicobars; *P. illucens*, ibid., Hongkong; *P. tenuis*, *l. c.* p. 66, Columbia; *P. conopsoides*, ibid., Columbia.

Cacosis grandis, Schiner, *l. c.* p. 67, South America.

Xylophagidæ.

Schiner (Reise der Novara, Dipt.) refers *Beris* and its immediate allies to the Stratiomyidæ, and divides the insects referred by the Recorder to the present group into 3 families, Xylophagidæ, Cœnomyidæ, and Anisomeridæ. *Cyclotelus* (=*Agapophytus*, Guér.), *Dimassus*, and *Phycus* (Walk.) are said to belong to the Therevidæ. *Inopus* (Walk.) is transferred by Schiner from

his Xylophagidæ to the Cœnomyidæ. The Xylophagidæ (*l. c.* p. 73) as restricted include, according to Schiner, only 24 described species, of four of which the habitat is unknown. The remainder are distributed, 7 in Europe, 11 in America, and 3 in Asia, and Africa and Australia possess 1 each. To his Cœnomyidæ (*l. c.* pp. 74, 75) Schiner refers the genera *Cœnomyia* (Lat.), *Chiromyza* (Wied.) = *Xenomorpha* (Macq.), *Arthropeas* (Loew), *Cœnura* (Bigot), *Hylorus* (Phil.), and *Inopus* (Walk.). These genera are founded on only 12 described species, of which 1 is European, 6 American, 3 Australian, and 1 Asiatic; 1 of unknown origin. Schiner describes 1 new species of *Cœnura*. The Acanthomeridæ (*l. c.* pp. 77, 78) include only the genera *Raphiorhynchus* and *Acanthomera* (Wied.), as to the distinctness of which Schiner is doubtful. The former is said to be identical with *Pantophthalmus* (Thunb.). The group includes 12 described species, all South American. Schiner describes a new Columbian species.

Damianitsch describes the transformations of *Xylophagus ater* (Fab.), the larva of which he found under the bark of the alder. The larva is figured. Verh. zool.-bot. Ges. in Wien, xviii. p. 117.

Xylophagus ater (Fab.). Frauenfeld (Verh. zool.-bot. Ges. in Wien, xviii. p. 166) confirms Drewsen's statement that the larva of this species is rapacious.

Exaireta, g. n., Schiner, Reise der Novara, Zool., Dipt. p. 71 = *Diphysa* (Macq.). Sp. *Xylophagus spiniger* (Wied.); *E. longicornis*, sp. n., *l. c.* p. 73, Chili.

Beris cærulescens, sp. n., Schiner, *l. c.* p. 71, Columbia.

Actina elegans, sp. n., Schiner, *l. c.* p. 71, Chili.

Cœnura albopunctata, sp. n.; Schiner, *l. c.* p. 77, Chili.

Acanthomera frauenfeldi, sp. n., Schiner, *l. c.* p. 78, Columbia.

Tabanidæ.

Schiner (Reise der Novara, Dipt. pp. 79, 80) remarks upon the general constitution and geographical distribution of the insects of this family. He states that it includes 1122 previously described species, of which 117 live in Europe, 516 in America, 148 in Asia, 154 in Africa, and 115 in Australia, whilst the native countries of 72 species are unknown. These species are referred by him to 23 genera. *Heptatoma* (Meig.) = *Hexatoma* (Meig.); *Tanyglossa* (Meig.) = *Pangonia* (Lat.); *Lepiselaga* (Macq.) = *Hadrus* (Perty); *Mesomyia* and *Ectenopsis* (Macq.) = *Silvius* (Meig.); *Philochile* (Wied.) = *Pangonia* (Lat.); and *Therioplectes* (Zell.) cannot be separated from *Tabanus*.

Pangonia fulvipes (Loew). Loew notices the characters of some Cilician specimens, which he refers to this species (Berl. ent. Zeitschr. 1868, p. 371).

Hexatoma. Marno (Sitzungsber. zool.-bot. Ges. in Wien, 1868, pp. 74–75) describes the metamorphoses of a species of this genus, the larvæ of which he found in dirty water, with those of *Eristalis* and *Culex*. The pupa-state is passed in damp ground.

New genera and species:—

Stibasoma, g. n., Schiner, Reise der Novara, Zool., Dipt. p. 93. Allied to *Tabanus*. Sp. *T. theotœnia, fulvohirtus*, and *tristis* (Wied.).

Apocampta, g. n., Schiner, *l. c.* p. 96. Allied to *Pangonia*. Sp. *A. nigra*, sp. n., Schiner, *l. c.* p. 96, Sydney.

Diclisa, g. n., Schiner, *l. c.* p. 101. Allied to *Mycteromyia* (Phil.). Sp.

Pangonia incompleta (Macq.); *D. maculipennis*, sp. n., Schiner, *l. c.* p. 102, and *D. distincta*, sp. n., Schiner, ibid., South America.

Tabanus. Of this genus Schiner (Reise der Novara, Zool. Dipt.) describes the following new species:—*T. bucolicus*, p. 81, Hongkong; *T. nicobarensis*, ibid., Nicobars; *T. macrophthalmus*, p. 82, Sydney; *T. mandarinus*, p. 83, Hongkong; *T. administrans*, ibid., Hongkong; *T. manilensis*, p. 84, Manilla; *T. pachnodes*, ibid., Chili; *T. apœcilus*, ibid., Chili; *T. clarus*, p. 88, *T. minos*, ibid., *T. argyrophorus*, p. 90, *T. cinnamomeus*, ibid., *T. calopterus*, p. 91, and *T. pœcilopterus*, ibid., South America; *T. scythropus*, p. 92, Brazil; and *T. ceylonicus*, p. 93, Ceylon.

Acanthocera trigonifera, Schiner, *l. c.* p. 95, South America.

Erodiorhynchus pusillus, Schiner, *l. c.* p. 97, Cape of Good Hope.

Palecorhynchus ornatus, Schiner, *l. c.* p. 98, Auckland.

Pangonia diaphana, Schiner, *l. c.* p. 99, Columbia.

Chrysops novus, Schiner, *l. c.* p. 103, Gibraltar; *C. calogaster*, Schiner, ibid., South America; *C. manilensis*, Schiner, *l. c.* p. 104, Manilla.

Agelanius albipalpis, Rondani, Ann. Soc. Nat. Modena, iii. p. 36, pl. 4. fig. 12 (antenna), Santa Fé and Cordova; *A. duplovittatus*, Rondani, *l. c.* p. 37, Buenos Ayres; *A. interpositus*, Rondani, *l. c.* p. 38, Mendoza; *A. acupunctatus*, Rondani, ibid., Patagonia.

Dichelacera nubipennis, Rondani, *l. c.* p. 39, Mendoza.

Nemestrinidæ.

Schiner (Reise der Novara, Dipt. pp. 105–108) criticises Loew's treatment of this family in the 'Dipteren-Fauna Süd-Afrika's.' He objects to the adoption of *Hirmoneura* as the typical genus of the family, and to the consequent change of its name to *Hirmoneuridæ*, and also to the division of the family into 2 sections, founded upon the length of the proboscis. Schiner enumerates the genera which have been established for the insects of this family, most of which he regards as badly constituted. *Nemestrina* he restricts to the species with the apex of the wing reticulated, and he separates from these the species (*N. longirostris* and *brevirostris*, Wied.) which have the axillary cell divided by a transverse vein, to form the genus *Megistorhynchus* (Macq.). *Rhynchocephalus* (Fisch.) is a mixed genus; *N. tauscheri* is taken as its type. The type of *Hirmoneura* is *H. obscura* (Meig.). *Trichophthalma* (Westw.) includes all Macquart's *Hirmoneuræ* with a long proboscis and densely hairy eyes. The South-African forms referred by Loew to *Megistorhynchus* (Macq.) are placed in a new genus by Schiner. The number of previously described species is 80, of which only 4 inhabit Europe, whilst America has 20, Asia 10, Africa 20, and Australia 19, and the habitat of 1 species is unknown. The number of genera accepted by Schiner is 11 (including his new genus).

Prosœca, g. n., Schiner, Reise der Novara, Zool., Dipt. p. 112. Allied to *Megistorhynchus*, but wings not reticulated. Sp. *Nemestrina westermanni* (Wied.).

New species:—

Hyrmoneura (sic) *lurida*, Rondani, Ann. Soc. Nat. Modena, iii. p. 33, pl. 4. fig. 10 (antenna), Mendoza; *H. strobelii*, Rondani, *l. c.* p. 34, pl. 4. fig. 11 (ant.), Santa Fé and Cordova.

Hirmoneura vicarians, Schiner, Reise der Novara, Zool., Dipt. p. 109, South America; *H. albistria*, Schiner, ibid., Chile.

Trichophthalma eques, Schiner, *l. c.* p. 110, and *T. monotænia*, Schiner, ibid., Sydney; *T. vicarians*, Schiner, *l. c.* p. 111, and *T. bombyliformis*, Schiner, ibid., Chile.

Bombyliidæ.

Schiner (Reise der Novara, Dipt. pp. 113–117) discusses the genera belonging to this family. *Tabuda* (Walk.) he refers to the *Therevidæ*. *Stygia* (Meig.) = *Lomatia* (Meig.); *Conophorus* (Meig.) = *Ploas* (Lat.); *Thlipsomyza* (Wied.) cannot be separated from *Amictus* (Wied.); *Heterostylum* (Macq.) belongs to *Bombylius*; *Adelidea* (Macq.) = *Sobarus* (Loew); *Megapalpus* and *Dasypalpus* (Macq.) are identical, and probably to be united with *Corsomyza* (Wied.); *Litorrhynchus* (Macq.) and *Argyrospilus* (Rond.) = *Exoprosopa* (Macq.); *Bombylisoma* (Rond.) = *Dischistus* (Loew); *Glossista* (Rond.) belongs to *Mulio* (Wied.); *Ligyra* (Newm.) and *Parisus* and *Choristus* (Walk.) must be united with *Bombylius*; and *Lagochilus* (Loew) = *Enica* (Macq.). Including several genera with which he is unacquainted in nature, Schiner accepts 53 established genera, and to these he adds 3 new ones.

Schiner discusses the subfamilies of the Bombyliidæ, of which he admits 4, namely,—

1. Anthracinæ: *Exoprosopa, Spogostylum, Argyromœba, Anthrax, Callostoma, Chalcochiton, Mulio*, and *Enica*.
2. Lomatinæ: *Cyllenia, Acrophthalmia, Apatomyza, Amictus, Antonia, Tomomyza, Oycodocera, Plesiocera, Lomatia, Anisotamia, Comptosia*, and *Neuria*.
3. Toxophorinæ: *Eclimus, Toxophora, Lepidophora, Eniconeura, Systropus*, and *Dolichomyia*.
4. Bombylinæ: *Apolysis, Cyrtosia, Usia, Platypygus, Triplasius, Nectaropota, Sobarus, Platamodes, Lordotus, Bombylius, Systœchus, Dischistus, Legnotus, Scinax, Sparnopolius, Cyclorhynchus, Eurycarenus, Acreotrichus, Sericosoma, Oligodranes, Geron, Crocidium, Phthiria, Corsomyza, Lasioprosopa, Ploas*, and *Cyrtophorus*.

The number of described species according to Schiner is 1036, of which Europe possesses 198, Asia 127, Africa 247, America 292, Australia 123, and 49 are of unknown origin. The Bombylinæ seem to have their capital in the eastern hemisphere, whilst the Anthracinæ are very abundantly represented in America and Australia. The Lomatinæ predominate in Australia. *Cyrtosia* is the only European genus not known to be represented in other parts of the world. The most aberrant forms are included among the Toxophorinæ, of which there are only two European species.

Mulio pallasii (Loew). Loew remarks (Berl. ent. Zeitschr. 1868, pp. 378–380) that he is now convinced that the smaller specimens with the hair at the base of the abdomen in the ♀ whitish or yellowish white, which were referred by him to this species, are really specifically distinct, and proposes to give them the name of *Mulio syriacus*. Nowicki has already expressed the same opinion, but has retained Loew's name, *M. pallasii*, for the smaller Syrian form, and denominated the true *M. pallasii*, which inhabits South Russia, *Chalcochiton schineri*. Loew indicates that this nomenclature is inadmissible.

Mulio and *Cytherea*. Loew remarks (*l. c.* p. 379) upon these genera. *Cytherea* (Fab.) has the priority over *Mulio* (Latr.); *M. obscurus* is the type of *Cytherea*, and the latter name must be retained for those species which agree with *M. obscurus* in their characters. *M. infuscatus* and some allied species with only two submarginal cells may also be referred to *Cytherea*, as *M. cinereus* and others have the anterior submarginal imperfectly divided, and thus form a transition from one group to the other. The species allied to *M. pallasii*, with a much shorter proboscis, two submarginal cells, and the first posterior marginal cell open, form the genus *Mulio*, with which Loew is inclined to combine his genus *Chalcochiton*.

New genera and species:—

Diplocampta, g. n., Schiner, Reise der Novara, Zool., Dipt. p. 119. Allied to *Exoprosopa*. Sp. *D. singularis*, sp. n., Schiner, *l. c.* p. 120, Chili.

Tritoneura, g. n., Schiner, *l. c.* p. 133. Allied to *Neuria* and *Comptosia*. Sp. *Comptosia lugubris* (Phil.).

Callynthrophora, g. n., Schiner, *l. c.* p. 139. Allied to *Corsomyza* (Wied.). Sp. *C. capensis*, sp. n., Schiner, *l. c.* p. 140, Cape of Good Hope.

Prorachthes, g. n., Loew, Berl. ent. Zeitschr. 1868, p. 381. Allied to *Apatomyza*; second submarginal cell very short and broad, discoidal cell wedge-shaped; joint 1 of antennæ oval, 3 almost equal to 1, very broad at base, truncated and irregularly impressed at apex; anterior tibiæ not produced into a spine at apex. Sp. *P. ledereri*, sp. n., Loew, *l. c.* p. 382, Cilicia.

Mulio marginalis, Rondani, Ann. Soc. Nat. Mod. iii. p. 35, pl. 4. fig. 8 (ant.), Buenos Ayres; *M. lateralis*, Rondani, ibid., pl. 4. fig. 9 (ant.), Mendoza.

Exoprosopa brahma, Schiner, Reise der Novara, Zool., Dipt. p. 118, Ceylon, and *E. dichotoma*, Schiner, *l. c.* p. 119, South America.

Argyromœba caloptera, Schiner, *l. c.* p. 121, South America; *A. pœcilophora*, Schiner, ibid., Chili; *A. imitans*, Schiner, *l. c.* p. 122, and *A. propinqua*, Schiner, *l. c.* p. 123, South America.

Anthrax semitinctus, Schiner, *l. c.* p. 124, and *A. nigricosta*, Schiner, *l. c.* p. 126, Chili.—*Anthrax barbiventris*, Rondani, *l. c.* p. 36, Mendoza.

Anthrax pygarga, Loew, *l. c.* p. 382, Cilicia.

Lomatia superba, Loew, *l. c.* p. 383, Cilicia.

Lomatia infernalis, Schiner, *l. c.* p. 128, Gibraltar; *L. australensis*, Schiner, *l. c.* p. 129, Sydney.

Neuria grandis, Schiner, *l. c.* p. 132, and *N. hemiteles*, Schiner, ibid., Sydney.

Dolichomyia detecta, Schiner, *l. c.* p. 135, Chili.

Systœchus callynthrophorus, Schiner, *l. c.* p. 137, Sydney.

Acroceridæ.

Schiner (Reise der Novara, Dipt. pp. 140–142) remarks upon the genera and subordinate classification of this family. Of the described genera he refers *Henops* (Fab.) to *Ogcodes* (Lat.), *Eriosoma* (Macq.) and *Exetasis* (Walk.) to *Oncœa* (Erichs.), *Pithogaster* (Loew) to *Opsebius* (Costa), *Platygaster* (Zett.) to *Sphærogaster* (Zett.), *Mesocera* (Macq.) to *Psilodera* (Gray), *Mesophysa* (Macq.) to *Panops* (Lamk.), and *Megalybus* (Phil.) to *Thyllis* (Erichs.). As regards the division of the group into subfamilies, Schiner rejects Loew's proposed two sections, *Cyrtina* and *Oncodina*, on the

ground that the greater or less complication of the venation of the wings does not furnish sufficient characters for this purpose. As the basis of his classification he adopts the structure of the thorax, which in *Terphis*, *Philopota*, and *Thyllis* has the prothoracic lobes so greatly developed as to meet above, separating the prothorax from the mesothorax, which is also extraordinarily developed. These form one subfamily. The other forms, in which this structure of the thorax does not occur, are divided into 2 groups, the *Acrocerinæ*, with the 3rd joint of the antennæ usually short, and always provided with a terminal seta, and the *Panopinæ*, in which this joint is long, or very long, and never furnished with an apical bristle. This arrangement is shown in the following table:—

1. Acrocerinæ. *a*. Proboscis abbreviated or 0: *Ogcodes*, *Acrocera*, *Holops*, ? *Sphærops*, *Opsebius*. *b*. Proboscis elongate: *Cyrtus*, *Psilodera*, ? *Sphærogaster*.
2. Panopinæ. *a*. Proboscis abbreviated: ? *Pterodontia*, *Pialea*, *Astomella*, ? *Apelleia*, ? *Physogaster*, *Oencea*, *Epicerina*. *b*. Proboscis elongate: *Pteropexus*, *Panops*, *Lasia*, *Eulonchus*.
3. Philopotinæ. *a*. Proboscis abbreviated: *Terphis*. *b*. Proboscis elongate: *Philopota*, *Thyllis*.

Schiner records 103 described species, distributed as follows:—in Europe 22, Asia 4, Africa 13, America 57, Australia 6; 1 species of unknown origin. *Sphærogaster* is the only genus peculiar to Europe. Nine genera are exclusively American; of 12 species of *Philopota*, 11 are American. *Psilodera* is peculiar to Africa, and *Panops* and *Epicerina* to Australia.

Holops frauenfeldii, sp. n., Schiner, Reise der Novara, Zool., Dipt. p. 143, Chili.

Lasia superba, sp. n., Schiner, *l. c.* p. 143, Chili.

Philopota semicincta, sp. n., Schiner, *l. c.* p. 144, South America.

Therevidæ.

Schiner (Reise der Novara, Dipt. pp. 145–146) remarks as follows upon some of the proposed genera of this family:—*Tabuda* (Walk.) is to be transferred here from the Bombyliidæ, *Chiromyza* (Wied.) belongs to the Xylophagidæ, and *Deuteragonista* (Phil.) to the Empidæ. *Baryphora* (Loew) and *Cionophora* (Egger) are referred to *Xestomyza* (Wied.); *Cyclotelus* (Walk.) = *Agapophytus* (Guér.); *Dimassus* (Walk.) = *Ectinorhynchus* (Macq.), with which also *Agapophytus* may be identical. Of 159 described species, 56 inhabit Europe, 23 Asia, 15 Africa, 31 America, and 26 Australia, whilst of 7 species the native county is unknown. *Thereva* is the most widely distributed genus.

New species:—

Psilocephala stigmaticalis, Schiner, *l. c.* p. 146, *P. proxima*, Schiner, *l. c.* p. 147, and *P. dives*, Schiner, ibid., South America.

Anabarhynchus luridus, Schiner, *l. c.* p. 148, Auckland; *A. calceatus*, Schiner, *l. c.* p. 149, and *A. longus*, Schiner, ibid., Sydney.

Ectinorhynchus superbus, Schiner, *l. c.* p. 150, and *E. viduus*, Schiner, ibid., Sydney.

Phycus dioctriæformis, Schiner, *l. c.* p. 151, Sydney.

Asilidæ.

Schiner (Reise der Novara, Dipt. pp. 151, 152, & 155–158) discusses the genera of this family, which he divides into two, the Midasidæ and Asilidæ. Of the former, *Pomaccra* (Macq.) and *Anypcnus* (Phil.) belong to *Apiocera* (Westw.); *Apiophora* (Phil.) appears to be identical with *Rhopalia* (Macq.), and *Megascelus* (Phil.) with *Dolichogaster* (Macq.). Schiner accepts only 5 genera as well founded, namely, besides those above mentioned, *Midas* (Fab.) and *Cephalocera* (Lat.). The number of known species is 88, of which Europe and Asia each possess only 3, whilst Africa has 13, America 46, and Australia 20. The native countries of 3 species are unknown. Of the numerous (165) genera described as belonging to the true Asilidæ, Schiner suppresses the following:—*Gonypes* (Lat.) = *Leptogaster* (Meig.); *Gastrichelius* (Rond.) = *Trichs* (Loew); *Blepharepium* (Rond.) must be referred to *Laparus*, *Saropogon*, or *Dasypogon*; *Cheilopogon* (Rond.) = *Dasypogon*; *Dactyliscus* (Rond.) = *Habropogon* (Loew); *Elasmocera* (Rond.) = *Xiphocera* (Macq.); *Euarmostus* (Walk.) probably = *Cyrtopogon* (Loew); *Morimma* (Walk.) = *Lastaurus* (Loew); *Clavator* (Phil.) = *Hypenetes* (Loew); *Chærades* (Walk.) = *Laphria*; *Nusa* (Walk.) = *Andrenosoma* (Rond.); *Ampyx* (Walk.) = *Megapoda* (Macq.); *Cormansis* (Walk.) = *Atomosia* (Macq.); *Acurana* (Walk.) = *Laxenecera* (Macq.). *Dyseris* (Loew) is founded on an error, and not distinct from *Laxenecera*. *Scandon* (Walk.) = *Thereutria* (Loew); *Heligmoneura* (Big.) = *Mochtherus* (Loew); *Eristicus* (Loew) is not sufficiently distinguished from *Erax* (Macq.). The Asilidæ, in Schiner's sense, include 1880 described species, namely, European 261, Asiatic 350, African 304, American 687, Australian 146, and of unknown origin 132. Schiner remarks upon some of the peculiarities in the distribution of the subfamilies and genera of this group.

Gerstäcker publishes (Stett. ent. Zeit. 1868, pp. 65–103) a monographic revision of the *Mydasii* (Latr.). After a summary of the history of the group, he gives the following table of the genera which he includes in it:—

I. Three cells between the fork-cell and the hind margin of the wing.
  A. Fork-cell with a long peduncle; proboscis very long, without terminal lips ..... 3. Mitrodetus, g. n.
  B. Fork-cell with a short peduncle; proboscis shorter, with terminal lips.
    * Lower face short, receding; proboscis projecting horizontally. 1. Diochlistus, g. n.
    † Lower face long, perpendicular; proboscis descending perpendicularly ..... 2. Triclonus, g. n.

II. Two cells between the fork-cell and the hinder margin of the wing.
  A. Apical club of antennæ very large and singularly formed. 7. Perissocerus, g. n.
  B. Apical club of ordinary structure.
    * Apical segment of abdomen in ♀ without a circlet of spines.
      1. Antennæ elongated; branches of the fork terminating separately in the first longitudinal vein.. 10. Mydas (Fab.).
      2. Antennæ short; branches of the fork united. 11. Dolichogaster (Macq.).
    † Apical segment of abdomen in ♀ with a circlet of spines.

1. Fork-cell with no appendicular vein at base.
   6. Rhopalia (Macq.).
2. Fork-cell with an appendicular vein at base.
   a. Proboscis without apical lips. 4. Cephalocera (Lat.).
   b. Proboscis with apical lips.
      a. Both branches of the fork terminating in the first longitudinal vein.
         α. Small transverse vein at hind margin of wing wanting; proboscis long ..... 5. Leptomydas, g. n.
         β. Small transverse vein at hind margin of wing present; proboscis rudimentary. 9. Ectyphus, g. n.
      b. Only the anterior branch of the fork terminating in the first longitudinal vein ..... 8. Miltinus, g. n.

Cephalocera includes *Midas longirostris, fasciatus, westermanni, rufithorax,* and *callosus* (Wied.), and *M. botta* (Macq.), *C. fascipennis* and *nigra* (Macq.), and three new species.

Rhopalia includes *spinolæ* and *olivieri* (Macq.), and *Midas vittatus* (Wied.). *R. vittata* (Macq.) is distinct from the latter species; Gerstäcker proposes for it the name of *R. algirica.*

Mydas includes 44 species, of which three are described as new. The previously described species are:—*M. politus, mystaceus* (=*annulicornis,* Westw.), *apicalis, leucops, rubidapex, virgatus, ruficornis, tricolor, tibialis, interruptus* (=*tricinctus,* Bell.), and *notospilus* (Wiedemann); *M. nitidulus* and *cærulescens* (=*giganteus,* Thunb.) (Olivier); *M. dives, crassipes, maculiventris, pachygaster, basalis, senilis,* and *parvulus* (Westwood); *M. heros* (Perty); *M. bonariensis* (Guérin); *M. gracilis, rufiventris, testaceiventris,* and *incisus* (Macquart), and also *M. vittatus* (Macq.) changed to *M. militaris* (Gerst.) on account of *M. vittatus* (Wied.); *M. igniticornis* (Bigot) (=*hygens,* Phil.); *M. clavatus* (Drury)=*filata* (Fab.)=*asiloides* (De G.)=*atratus* (Macq.); *M. fulvifrons* (Illiger); *M. fulvipes* (Walsh); *M. rubrocinctus* (Blanchard); *Apiophora paulseni* (Philippi); *M. bitæniatus* and *subinterruptus* (Bellardi); *M. venosus, luteipennis,* and *simplex* (Loew), and *M. rufiventris* (Loew) changed to *M. ventralis* (Gerst.) on account of *M. rufiventris* (Macq.); and *M. bifascia* and *incipiens* (Walker).

Dolichogaster includes only *M. brevicornis* (Wied.).

New genera:—

Diochlistus, g. n., Gerstäcker, *l. c.* p. 73. (See table, p. 355.) Sp. *D. mitis,* sp. n., Gerst. ibid., pl. 1. fig. 1, Swan River.

Triclonus, g. n., Gerstäcker, *l. c.* p. 75. (See table, p. 355.) Sp. *Midas bispinifer* (Westw.)=*Ceph. gracilis* + *M. clavata* (Macq.); *M. melleipennis* (Westw.); *M. auripennis* (Westw.)=*fulvipennis* (Macq.); *M. effractus* (Walk.).

Mitrodetus, g. n., Gestäcker, *l. c.* p. 76. (See table, p. 355.) Sp. *Ceph. dentitarsis* (Macq.)=*albicincta* (Blanch.)=*elegans* (Phil.); *C. leucotricha* (Phil.); *C. dimidiata* (Phil.).

Leptomydas, g. n., Gerstäcker, *l. c.* p. 81. (See table, *suprà.*) Sp. *M. lusitanicus* (Wied.)=*fulviventris* (Duf.); *M. cinctus* (Macq.); *M. rufipes* (Westw.); *M. lineatus* (Oliv.); *M. dispar* (Loew). Sp. n. *L. humeralis,* Gerst. *l. c.* p. 82, pl. 1. fig. 2; *L. nivosus,* Gerst. *l. c.* p. 83, and *L. paganus,*

Gerst. *l. c.* p. 84, from South Africa; and *L. pantherinus*, Gerst. *l. c.* p. 85, California.

Perissocerus, g. n., Gerstäcker, *l. c.* p. 87. (See table, p. 355.) Sp. *P. abyssinicus*, sp. n., Gerst. *l. c.* p. 87, pl. 1. fig. 4, Abyssinia.

Miltinus, g. n., Gerstäcker, *l. c.* p. 88. (See table, p. 356.) Sp. *M. viduatus* (Westw.)=*concinnus* (Macq.)=*signata* (Walk.); *M. varipes* (Macq.); *M. limpidipennis*, *sordidus*, *stenogaster*, and *bicolor*, and *Ceph. maculipennis* (Westw.); *M. clavigera* (Walk.). Sp. n. *M. hæmorrhous*, Gerst. *l. c.* p. 89, Swan River; and *M. cardinalis*, Gerst. *l. c.* p. 90, pl. 1. fig. 5, Adelaide.

Ectyphus, g. n., Gerstäcker, *l. c.* p. 92. (See table, p. 356.) Sp. *E. pinguis*, sp. n., Gerst. *l. c.* p. 92, pl. 1. figs. 6, 7, South Africa.

Lochites, g. n., Schiner, Reise der Novara, Zool., Dipt. p. 163. Allied to *Dasypogon*. Sp. *L. gyrophorus*, sp. n., Schiner, *l. c.* p. 164, Brazil, and *L. staurophorus*, sp. n., Schiner, ibid., Columbia.

Obelophorus, g. n., Schiner, *l. c.* p. 167. Allied to *Dasypogon*. Sp. *D. terebratus* (Macq.).

Archilestes, g. n., Schiner, *l. c.* p. 168. Allied to *Dasypogon*. Sp. *D. magnificus* (Walker).

Cerotainia, g. n., Schiner, *l. c.* p. 170. Allied to *Atomosia*. Sp. *C. argyropus*, sp. n., Schiner, *l. c.* p. 170, *C. aurata*, sp. n., Schiner, *l. c.* p. 171, and *C. propinqua*, sp. n., Schiner, ibid., Columbia.

Eumecosoma, g. n., Schiner, *l. c.* p. 171. Allied to *Atomosia*. Sp. *E. metallescens*, sp. n., Schiner, *l. c.* p. 171, and *E. staurophora*, sp. n., Schiner, *l. c.* p. 172, South America.

Maira, g. n., Schiner, *l. c.* p. 173. Allied to *Lampria*. Sp. *M. kubinyii* (Doleschall) and *Laphria aurifacies* (Macq.).

Threnia, g. n., Schiner, *l. c.* p. 184. Sp. *Asilus carbonarius* (Wied.); *T. lugens*, sp. n., Schiner, *l. c.* p. 185, and *T. longipennis*, Schiner, ibid., South America.

Glaphyropyga, g. n., Schiner, *l. c.* p. 187. Allied to *Senoprosopis*. Sp. *G. australasiæ*, sp. n., Schiner, *l. c.* p. 187, Sydney.

Emphysomera, g. n., Schiner, *l. c.* p. 195. Allied to *Ommatius*. Sp. *O. spathulatus* (Doleschall); *E. nigra*, sp. n., Schiner, ibid., Nicobars (Sambelong).

New species:—

Isopogon brevis, Schiner, Reise der Novara, Zool., Dipt. p. 158, Gibraltar.

Bathypogon claripennis, Schiner, *l. c.* p. 160, and *B. hirtuosus*, Schiner, ibid., Chili.

Stichopogon nicobarensis, Schiner, *l. c.* p. 161, Kondul.

Discocephala scopifer, Schiner, *l. c.* p. 161, South America.

Damalis grossa, Schiner, *l. c.* p. 161, Hongkong.

Triclis ornatus, Schiner, *l. c.* p. 162, Gibraltar; *T. tricolor*, Schiner, ibid., Chili.

Scylaticus philippii, Schiner, *l. c.* p. 163, Chili; *S. degener*, Schiner, ibid., Hongkong.

Stenopogon melanostolus, Loew, Berl. ent. Zeitschr. 1868, p. 372, *S. xanthomelas*, Loew, ibid., *S. nigriventris*, Loew, *l. c.* p. 373, *S. mollis*, Loew, *l. c.* p. 374, *S. harpax*, Loew, *l. c.* p. 375, and *S. semitestaceus*, Loew, *l. c.* p. 377, from Asia Minor.

Dasipogon (sic) *anulitarsis* (sic), Rondani, Ann. Soc. Nat. Modena, iii. p. 32, Santa Fé and Cordova.

Dasypogon melaleucus, Schiner, *l. c.* p. 165, and *D. lindigii*, Schiner, ibid., South America.

Saropogon perniger, Schiner, *l. c.* p. 166, Chili, and *S. antipodus*, Schiner, ibid., Auckland.

Cylindrophora calopyga, Schiner, *l. c.* p. 166, Chili.

Thereutria pulchra, Schiner, *l. c.* p. 169, New Holland.

Atomosia argyrophora, Schiner, *l. c.* p. 169, Brazil, and *A. ancylocera*, Schiner, *l. c.* p. 170, South America.

Laphria transatlantica, Schiner, *l. c.* p. 173, South America.

Laphria columbica, Walker, Lord's Naturalist in Vancouver's Island &c. ii. p. 338.

Lampria fulgida, Schiner, *l. c.* p. 174, Brazil.

Laphystia columbina, Schiner, *l. c.* p. 175, Columbia.

Andrenosoma pygophora, Schiner, *l. c.* p. 175, South America.

Mallophora affinis, Schiner, *l. c.* p. 176, Rio de Janeiro.

Promachus nicobarensis, Schiner, *l. c.* p. 177, Kar Nicobar.

Promachus forcipatus, Schiner, *l. c.* p. 178, Manilla.

Philodicus ceylanicus, Schiner, *l. c.* p. 179, Ceylon; *P. chinensis*, Schiner, ibid., Hongkong; *P. longipes*, Schiner, ibid., Manilla.

Erax. Schiner describes the following new species of this genus:—*E. perniger*, *l. c.* p. 180, Chili; *E. cellatus*, *l. c.* p. 181, South America; *E. costatus*, ibid., Columbia; and *E. pictipennis*, *l. c.* p. 183, South America.

Antiphrisson aberrans, Schiner, *l. c.* p. 184, Gibraltar.

Dasophrys personatus, Schiner, *l. c.* p. 186, Cape of Good Hope.

Cerdistus sydneyensis, Schiner, *l. c.* p. 187, Sydney.

Itamus dipygus, Schiner, *l. c.* p. 188, Nicobars (Sambelong); *I. planiceps*, Schiner, *l. c.* p. 189, Sydney; *I. melanopogon*, Schiner, *l. c.* p. 190, Auckland.

Epitriptus maximus, Schiner, *l. c.* p. 191, Gibraltar.

Tolmerus novarensis, Schiner, *l. c.* p. 191, Madeira, and *T. nicobarensis*, Schiner, *l. c.* p. 192, Nicobars.

Machimus madeirensis, Schiner, *l. c.* p. 192, Madeira.

Ommatius frauenfeldi, Schiner, *l. c.* p. 193, Nicobars (Kombul); *O. apicalis*, Schiner, *l. c.* p. 194, South America; *O. scopifer*, Schiner, ibid., Columbia.

Cephalocera umbrina, Gerstäcker, *l. c.* p. 77, South Africa; *C. catulus*, Gerst. *l. c.* p. 79, pl. 1. fig. 2, South Africa; *C. partita*, Gerst. *l. c.* p. 80, South Africa.

Mydas argyrostomus, Gerstäcker, *l. c.* p. 94, Columbia; *M. lavatus*, Gerst. *l. c.* p. 96 (=? *xanthopterus*, Loew), Mexico; *M. annularis*, Gerst. *l. c.* p. 100, Mexico.

Leptidæ.

Schiner (Reise der Novara, Zool., Dipt. pp. 195, 196) notices the genera of this family. According to him, the following genera, hitherto referred to the Leptidæ, properly belong elsewhere:—*Exeretoneura* (Macq.) to the Nemestrinidæ, *Syneches* (Walk.) and *Dasypalpus* (Macq.) to the Bombyliidæ. *Heliomyia* (Dol.) = *Chrysopila* (Macq.) and *Trichopalpus* (Phil.) probably = *Dasyomma* (Macq.) belong to the Leptidæ. *Ptiolina* (Zett.) is probably identical with *Spania* (Meig.), and the name has been incorrectly given by

Schiner (Dipt. Austr.) to a group which has been distinguished by Frauenfeld under the name of *Sympheromyia*. Schiner accepts 12 genera as well founded in this family. They include 146 described species, of which 57 are European, 12 Asiatic, 2 African, 68 American, and 4 Australian. Of 3 species the origin is unknown.

Schiner gives a table of the species of the genus *Ptiolina*, including his 2 new ones. Verh. zool.-bot. Ges. in Wien, xviii. p. 912, note.

Hilarimorpha singularis (Schin.). Schiner notices this species, which occurred in 1868 in great numbers in the locality where it was originally discovered. *L. c.* pp. 909, 910.

Ptiolina phragmitophila, sp. n., Schiner, *l. c.* p. 910, and *P. calamodytes*, sp. n., Schiner, *l. c.* p. 911, near Klosterneuburg.

Chrysopila. Schiner (Reise der Novara, Zool., Dipt.) describes the following new species of this genus:—*C. caloptera*, p. 197, Rio de Janeiro; *C. americana*, ibid., South America; *C. consanquinea* (sic), p. 198, Rio de Janeiro; *C. irrorata*, ibid., South America; *C. elegans*, ibid., Columbia; *C. argyrophora*, p. 199, South America; *C. insularis*, ibid., Nicobars (Tellnschong).

Empidæ.

Schiner (Reise der Novara, Zool., Dipt. pp. 200–202) revises the genera of this family, which he considers has been improperly divided into three by Loew. He admits 5 subfamilies in it, namely, *Hybotinæ*, *Ocydrominæ*, *Empinæ*, *Hemerodrominæ*, and *Tachydrominæ*. With regard to the previously proposed genera, of which he gives a list, he states that *Macrostomus* (Wied.) = *Rhamphomyia* (Meig.); *Acromyia* (Bon.) = *Hybos* (Fab.); *Sicus* (Lat.) = *Tachydromia* (Fab.); *Platyptera* (Meig.) and *Platypteryyia* (Steph.) are to be combined with *Empis*; *Tachypeza* (Meig.) = *Tachydromia*; *Trichina* (Meig.) = *Microphorus* (Macq.); *Paramesia* (Macq.), *Wiedemannia* (Zett.), and *Heleodromia* (Hal.), belong to *Clinocera* (Meig.); *Xiphidicera* (Macq.) = *Œdalea* (Meig.); *Anthalia* (Zett.) cannot be distinguished from *Euthyneura* (Macq.); *Microcera* (Zett.) = *Sciodromia* (Hal.); *Microsania* (Zett.) = *Cyrtoma* (Meig.); and *Leptosceles* (Hal.) = *Ardoptera* (Macq.). Certain genera proposed by Bigot and Rondani in analytical tables are regarded by Schiner as insufficiently founded: thus he provisionally refers *Chiromantis*, *Mantipeza*, *Polydromia*, *Lepidromia*, and *Microdromia* (Big.) to *Hemerodromia* (Meig.); *Phoroxypha* (Rond.) and *Grossopalpus* (Big.) to *Platypalpus* (Macq.); *Dryodromia* (Rond.) to *Tachydromia*; and *Microcyrta* (Big.) to *Cyrtoma*. With regard to the asserted identity of *Syneches* (Walk.) and *Pterospilus* (Rond.), Schiner expresses doubts. *Lampromyia* (Macq.) belongs to the Leptidæ. The described species of this family are, according to Schiner, 822 in number, and of them 497 inhabit Europe, 13 Asia, 30 Africa, 271 America, and 5 Australia; the origin of 6 species is unknown. The apparent predominance of the family in Europe is to be accounted for partly, according to Schiner, by the difficulty of collecting the species, owing to their peculiar habits.

Loew (Berl. ent. Zeitsch. 1868, pp. 168–175) discusses the characters of *Empis albicans* (Meig.) and of a new species described by him. He refers to their likeness to *Pachymeria* (Meig.), and remarks that they belong to that genus, if taken in Meigen's sense; but regards them as properly forming a new generic group, the establishment of which he declines for the present.

Loew, in some supplementary remarks on the species allied to *Empis albicans* (Berl. ent. Zeitsch. 1868, pp. 387–393), corrects several errors into which he had fallen, and especially states that he described as the ♀ of *E. phænomeris* specimens belonging to a nearly allied new species, here named *E. eumera*.

Empis nitida (Meig.). Loew (Berl. ent. Zeitsch. 1868, pp. 231–240) discusses the characters of this species, referred by Meigen to *Pachymeria*, but which he regards as forming, with *E. truncata* (Meig.), *E. lucida* (Zett.), and two new species, a peculiar group of the genus *Empis*. All the species are characterized.

New species:—

Hybos pilosus, Schiner, Reise der Novara, Zool., Dipt. p. 202, and *H. stigmaticus*, Schiner, ibid., Columbia; *H. sydneyensis*, Schiner, *l. c.* p. 203, Sydney.

Empis. Schiner describes the following new species of this genus:—*E. micans*, *l. c.* p. 204, South America; *E. xanthopyga*, ibid., Sydney; *E. columbi*, *l. c.* p. 205, Columbia; *E. pachymerina*, ibid., and *E. dolichopodina*, ibid., South America.

Empis phænomeris, Loew, Berl. ent. Zeitschr. 1868, p. 172, Sarepta; *E. monticola*, Loew, *l. c.* p. 233, Alps; *E. longipennis*, Loew, *l. c.* p. 239, Western Siberia; *E. eumera*, Loew, *l. c.* p. 388, Sarepta; *E. curvipes*, Loew, *l. c.* p. 391. Sarepta.

Hilara vanellus, Schiner, *l. c.* p. 206, Columbia; *H. capensis*, Schiner, ibid., Cape of Good Hope.

Dolichopodidæ.

Schiner (Reise der Novara, Zool., Dipt. pp. 206–208), in discussing the described genera of this family, remarks upon some of them as follows:—*Satyra* (Meig.)=*Dolichopus* (Lat.); *Leptopus* (Fall.) and *Sciapus* (Zell.)=*Psilopus* (Meig.); *Hydrochus* (Fall.)=*Porphyrops* (Meig.)+*Rhaphium* (Meig.); *Anglearia* (Carlier) may be united with *Porphyrops*; *Orthobates* (Wahlb.), *Anorthrus* (Staeg.), and *Tæchobates* (Hal.)=*Medeterus* (Meig.); *Ammobates* (Stann.)=*Tachytrechus* (Stann.); *Perithinus* (Hal.)=*Rhaphium*; *Camptosceles* (Hal.)=*Campsionemus* (Walk.); *Plectropus* (Hal.)=*Neurigona* (Rond.); *Aphrozeta* (Perr.)=*Hydrophorus* (Fall.); *Achantipodus* (Rond.)=*Gymnopternus* (Loew); *Anaplomerus* (Rond.)=*Liancalus* (Loew); *Ludovicius* (Rond.)=*Haltericerus* (Rond.). With regard to Bigot's numerous genera, separated from *Psilopus*, Schiner is doubtful, but thinks that some of them will prove to be well founded. *Hercostomus* (Loew) he regards as not well established; *Eutarsus* and *Nematoproctus* (Loew) are united respectively with *Neurigona* and *Diaphorus*, the former being regarded as insufficiently characterized. *Hydatostega* (Phil.)=*Scellus* (Loew); *Xiphandrium* (Loew) belongs to *Rhaphium*, and *Orthoceratium* (Schr.) to *Dolichopus*. Forty genera are regarded by Schiner as well founded. They include 822 described species, distributed as follows:—In Europe 399, in Asia 66, in Africa 40, in America 296, and in *Australia* 17; of four species the habitat is not known. Of the Australian species, 16 belong to *Psilopus*, whilst the European Psilopinæ only number 19, and that group seems to be peculiarly an exotic one, the proportion of European to exotic species being 19: 103.

Sybistroma setosa (Schin.) and *Dolichopus braueri* (Now.). Kowarz describes the ♀ of these species (Verh. zool.-bot. Ges. in Wien, xviii. pp. 214 & 215). The latter is probably identical with *D. tibiellus*.

Scellus notatus (Fab.). Schiner notices the occurrence of this species near Weidling, and describes its habits. Verh. zool.-bot. Ges. in Wien, xviii. pp. 913–914.

Campsicnemus magius (Loew). Schiner notices the occurrence of this Sicilian species in Austria. *L. c.* p. 914.

New species:—

Mesorhaga, g. n., Schiner, Reise der Novara, Zool., Dipt. p. 217. Allied to *Psilopus*. Sp. *M. tristis*, sp. n., Schiner, *l. c.* p. 217, Columbia.

Psilopus superfluus, Schiner, Reise der Novara, Zool., Dipt. p. 210, South America; *P. chrysurgus*, Schiner, *l. c.* p. 214, Sydney; *P. chætophorus*, Schiner, ibid., Brazil; *P. australensis*, Schiner, *l. c.* p. 216, and *P. viduus*, Schiner, ibid., Sydney.

Neurigona braziliensis, Schiner, *l. c.* p. 218, Brazil.

Xanthochlorus tarsatus, Schiner, *l. c.* p. 218, Pulo-Milu.

Paracleius tylophorus, Schiner, *l. c.* p. 219, South America.

Pelastoneurus flavipes, Schiner, *l. c.* p. 219, Brazil.

Tachytrechus pteropodus, Schiner, *l. c.* p. 220, Brazil.

Sybistroma americana, Schiner, *l. c.* p. 220, Brazil.

Hydrophorus antarcticus, Schiner, *l. c.* p. 221, St. Paul.

Peodes nicobarensis, Schiner, *l. c.* p. 221, Nicobars (Sambelong).

Medeterus occidentalis, Schiner, *l. c.* p. 222, Columbia.

Gymnopternus ministerialis, Kowarz, Verh. zool.-bot. Ges. in Wien, xviii. p. 215, Losoncz; *G. civilis*, Kowarz, *l. c.* p. 217, Pesth.

Teuchophorus pectinifer, Kowarz, *l. c.* p. 218, Bohemia.

Medeterus chrysotimiformis, Kowarz, *l. c.* p. 220, Ofen.

Phoridæ.

Schiner (Reise der Novara, Zool., Dipt. p. 223) notices the genera of this family, of which he regards 10 as well established. *Noda* (Schell.) belongs to *Phora*; *Philodendria* (Rond.)=*Trineura* (Meig.). The described species number 103, of which 88 are European, 3 Asiatic, 4 African, 7 American, and 1 Australian. *Phora* is represented in all parts of the world; *Pallura* (Walk.) is Asiatic, and *Psyllomyia* (Loew) African; *Trineura* (Meig.) occurs in Europe and Asia.

Phora sinensis, sp. n., Schiner, *l. c.* p. 224, Hongkong; *P. orientalis*, sp. n., Schiner, ibid., Nicobars (Kondul); *P. stylata*, sp. n., Schiner, ibid., Columbia.

Muscidæ.

Schiner (Reise der Novara, Zool., Dipt. pp. 225, 226, & 291–294) discusses the classification of the insects of this family, of which he recognizes 7348 species (exclusive of thos edescribed by Robineau-Desvoidy). Of these, the *Acalypteræ* include 3268 species and the *Calypteræ* 4080, distributed as follows:—In Europe 4041 (1736+2305), in Asia 818 (438+380), in Africa 483 (211+272), in America 1477 (720+757), and in Australia 385 (116+269). Of 144 (47+97) species the origin is unknown. The following indications of generic synonymy are given:—

MUSCIDÆ ACALYPTERÆ. *Achias* (Meig.), includes *Zygothrica* (Wied.) and *Themara* (Walk.); *Borborus* (Meig.), incl. *Apterina* (Macq.), *Mycetia*, *Nerea*, and *Sphærocera* (R.-Desv.), and *Copromyza* (Fall.); *Scatophaga* (Meig.) =*Scatomyza* (Fall.), *Pyropa* (Ill.), *Amina* and *Scatina* (R.-Desv.); *Actora* (Meig.)=*Helcomyza* (Curt.); *Lucina* (Meig.)=*Salticella* (R.-Desv.); *Elgiva* (Meig.)=*Chione* (R.-Desv.), *Hydromyia* (Rond.), and *Ilione* (Hal.); *Diastata* (Meig.)=*Euthycheta* and *Leptopezina* (Macq.), *Tryptocheta* (Rond.); *Lipara* (Meig.)=*Gymnopoda* (Macq.); *Psila* (Meig.)= *Psilomyia* (Macq.), *Scatophaga* (Zett.), *Oblicia* (R.-Desv.); *Calobata* (Meig.)=*Ceyx* (Dum.), *Tænioptera* (Macq.), and *Rainiera* (Rond.); *Micropeza* (Meig.)=*Phantasma* (R.-Desv.); *Cephalia* (Meig.)= ? *Myrmecomyia* (R.-Desv.); *Trypeta* (Meig.) = *Terellia* and *Sitarea* (R.-Desv.); *Platystoma* (Meig.), incl. *Hesyquillia* and *Palpomyia* (R.-Desv.); *Phytomyza* (Meig.) incl. *Chromatomyia* (Hardy) and *Napomyia*, p. (Hal.); *Milichia* (Meig.) incl. *Argyrites* (Lat.), *Odinia* (R.-Desv.); *Sphærocera* (Lat.) incl. *Lordatia*, *Coprina* (R.-Desv.), and *Ceroptera*, p. (Macq.); *Ochthera* (Lat.)=*Macrochira* (Meig.); *Mosillus* (Lat.)=*Gymnopa* (Meig.); *Tephritis* (Lat.)=*Acinia*, *Urellia*, and *Oxyna* (R.-Desv.); *Tetanocera* (Dum.)=*Pherbina* and *Retellia* (R.-Desv.) and *Euthycera* (Lat.); *Helomyza* (Fall.) incl. *Suillia* and *Herbina* (R.-Desv.); *Heteromyza* (Fall.) incl. *Lentiphora* (R.-D.); *Dryomyza* (Fall.) incl. *Dryope* (R.-D.); *Sciomyza* (Fall.) incl. *Colobæa* (Zett.), *Dictya*, *Chætocera*, *Arina*, *Pherbellia*, and *Melina* (R.-D.); *Opomyza* (Fall.)=*Ctenulus*, p. (Rond.); *Drosophila* (Fall.)=*Scaptomyza* (Hardy); *Notiphila* (Fall.)=*Keratocera* (R.-D.); *Ephydra* (Fall.)=*Napæa* (R.-D.); *Chyliza* (Fall.)=*Dasyna*, p. (R.-D.); *Piophila* (Fall.)=*Tyrophaga* (Kirby); *Sepsis* (Fall.) incl. *Enicita* (Curt.) and *Enicopus* (Walk.); *Sapromyza* (Fall.) incl. *Minettia*, *Lycia*, *Sylvia*, and *Terennia* (R.-D.); *Lonchæa* (Fall.) incl. *Teremya* (Macq.) and *Earomyia*, p. (Zett.); *Ortalis* (Fall.), incl. *Blainvillia* and *Boisduvalia* (R.-D.); *Ochthiphila* (Fall.), incl. *Chamæmyia* (Panz.) and *Estelia* (R.-D.); *Hydromyza* (Fall.), incl. *Nuphuria* (R.-D.), *Spaziphora*, *Stægeria*, and *Trichopalpus* (Rond.); *Cordylura* (Fall.) incl. *Mosina* and *Phrosia* (R.-D.); *Longina* (R.-D.)=*Macrotoma* (Lap.) and *Diateinia* (Westw.); *Pyrgota* (R.-D.)=*Oxycephala* (Macq.) and *Adapsilia* (Wag.); *Fucellia* (R.-D.)=*Scatomyza* (Fall.), *Halithea* (Hal.); *Leria* (R.-D.)=*Blepharitera* (Macq.), *Orbellia* (R.-D.); *Limnia* (R.-D.) incl. *Cylidria*, *Limosia* (R.-D.), *Thais* (Hal.), *Oregocera* and *Coremacera* (Rond.); *Scyphella* (R.-D.) =*Thyrinuyza* (Zett.), *Lisella* (R.-D.); *Saltella* (R.-D.)=*Anisophysa* (Macq.), *Pandora* (Hal.); *Themira* (R.-D.)=*Cheligaster* (Macq.); *Scatella* (R.-D.) incl. *Chlorophora* (R.-D.); *Acidia* (R.-D.)=*Strauzia* (R.-D.), *Epidesma* (Rond.); *Orellia* (R.-D.)=*Goniglossum* (Rond.); *Myodina* (R.-D.)=*Scioptera* (Kirby); *Richardia* (R.-D.)=*Merodina* (Macq.); *Ceratites* (M'Leay)= *Petalophora* (Macq.); *Limosina* (Macq.)=*Heteroptera* (Macq.), incl. *Copromyza* (Fall.), *Mysetia* and *Nerea* (R.-D.), and *Pterennis* (Rond.); *Leptomyza* (Macq.)=*Anthomyza* (Fall.), *Anthophilina* (Zett.); *Aulaciyaster* (Macq.)= *Apotomella* (L. Duf.), *Ampycophora* (Wahlb.); *Elachiptera* (Macq.)=*Crassiseta* (v. Ros.), *Myrmecomorpha* (L. Duf.); *Michogaster* (Macq.)=*Polystodes* (R.-D.); *Loxoneura* (Macq.)=*Zona* (Walk.); *Lamprogaster* (Macq.)= *Chromatomyia* (Walk.); *Trigonometopus* (Macq.)= *Oxyrhina* (Mg.); *Ceroxys* (Macq.) incl. *Melieria* and *Meckelia* (R.-D.); *Cleigastra* (Macq.) incl. *Delina* (R.-D.), *Gonotherus* (Rond.), and *Cnemopogon* (Rond.); *Phy-*

codroma (Stenh.)=*Malacomyia* (Hal.); *Parydra* (Stenh.)=*Napæa* (R.-D.); *Axysta* (Hal.)=*Hydrina* (R.-D.); *Ilythea* (Hal.)=*Epipela* (Stenh.); *Clusia* (Hal.) incl. *Macrochira* (Zett.) and *Amphipogon* (Wahlb.); *Schœnomyia* (Hal.)=*Litorella* (Rond.); *Selachops* (Wahlb.)=*Encœlocera* (Loew); *Lobioptera* (Wahlb.)=*Argyrites* (Latr.); *Psairoptera* (Wahlb.)=*Homalocephala* (Zett.); *Œdeparea* (Loew)=*Heterostoma* (Rond.); *Spilographa* (Loew), incl. *Rhagoletis* and *Zonosema* (Loew) and *Forellia* (R.-D.); *Carphotricha* (Loew) incl. *Nœeta* (R.-D.), *Dithryca* and *Oplocheta* (Rond.); *Teriastiomyia* (Bigot) incl. *Phythalmia* (Gerst.), *Angitula* (Walk.), and *Elaphomyia* (Saund.); *Zygœnula* (Dol.) incl. *Trigonosoma* (Gray), *Pterogenia* (Bigot), and *Gorgopsis* (Gerst.); *Cormoptera* (Schiner)=*Graphomyzina* (Macq.); *Ephygrobia* (Sch.) incl. *Psilopa* (Fall.) and *Hygrella* (Hal.); *Chloria* (Sch.)=*Chrysomyza* (Fall.); *Ceratomyza* (Sch.)=*Odontocera* (Macq.); and *Acrometopia* (Sch.)=*Oxyrhina* (Zett.).

Muscidæ calypteræ. *Musca* (Linn.) incl. *Plaxemyia* and *Biomyia* (R.-D.); *Lispe* (Latr.)=*Myoda* (Lamk.); *Ocyptera* (Latr.) incl. *Eriothrix* and *Cylindromyia* (Meig.) and *Parthenia* (R.-D.); *Cistogaster* (Latr.)=*Pallasia* (R.-D.); *Cœnosia* (Meig.) incl. *Micophaga, Oplogaster,* and *Chelisia* (Rond.), *Pulusia* and *Limosia* (R.-D.); *Anthomyia* (Meig.) incl. *Egle, Delia,* and *Aminta* (R.-D.); *Lasiops* (Meig.) incl. *Phaonia* (R.-D.) and *Thricops* (Rond.); *Cyrtoneura* (Meig.) incl. *Curtoneura* (Macq.), *Morellia* and *Muscina* (R.-D.); *Sarcophaga* (Meig.) incl. *Myophora, Gesneria, Phorella,* and *Myorhina* (R.-D.), and *Blæsoxypha* (Loew); *Dexia* (Meig.) incl. *Myocera* and *Catilia* (R.-D.); *Melania* (Meig.) incl. *Phyllomyia* and *Phorophylla* (R.-D.); *Plesina* (Meig.)=*Feburia* (R.-D.); *Leucostoma* (Meig.)=*Clelia* (R.-D.); *Clista* (Meig.)=*Microcheilosia* (Macq.); *Hypostena* (Meig.)=*Clausicella* (Rond.); *Siphona* (Meig.)=*Bucentes* (Latr.); *Miltogramma* (Meig.)=*Sphixapata* (Rond.); *Metopia* (Meig.) incl. *Araba* and *Ophelia* (R.-D.); *Frontina* (Meig.) incl. *Hebia* and *Latreillia* (R.-D.); *Tachina* (Meig.) incl. *Brachycoma* (Rond.) and *Oodigaster* (Macq.); *Exorista* (Meig.) incl. *Carcellia, Phryxe, Lypha, Phryne, Erythrocera, Salia, Zenillia, Hubneria, Melibœa, Smidtia, Dorbinia,* and *Damonia* (R.-D.), *Lydella* (Macq.), *Aporomyia, Chetolyga,* and *Lomacantha* (Rond.); *Trixa* (Meig.)=*Crameria* (R.-D.); *Gonia* (Meig.) incl. *Pissemyia, Reaumuria, Isomera, Rhedia,* and *Spallanzania,* (R.-D.); *Plagia* (Meig.) incl. *Cyrtophlœba* and *Blepharigena* (Rond.); *Labidigaster* (Meig.) incl. *Cassidæmyia* (Macq.) and *Dionœa* (R.-D.); *Ananta* (Meig.)=*Elomyia* (R.-D.); *Echinomyia* (Dum.) incl. *Fabricia, Fauvelia, Pelcteria, Servillia,* and *Dumerilia* (R.-D.); *Pegomyia* (R.-D.) incl. *Chlorina, Phorœa,* and *Zabia* (R.-D.), *Aricia* (R.-D.), *Macrosoma, Fellœa, Euphemia, Phaonia,* and *Trennia* (R.-D.); *Ophyra* (R.-D.)=*Peronia* (R.-D.); *Hydrotœa* (R.-D.) incl. *Blanvillia* (R.-D.) and *Anodontha* (Rond.); *Limnophora* (R.-D.) incl. *Helina* and *Phyllis* (R.-D.); *Lucilia* (R.-D.) incl. *Phormia* and *Chrysomyia* (R.-D.); *Pollenia* (R.-D.)=*Nitellia* (R.-D.); *Calliphora* (R.-D.)=*Mufetia* (R.-D.); *Amenia* (R.-D.)=*Ptylostylum* (Macq.); *Rhynchomyia* (R.-D.)=*Beria* (R.-D.); *Onesia* (R.-D.)=*Melinda* (R.-D.); *Dinera* (R.-D.) incl. *Estheria* and *Aria* (R.-D.) and *Diaugia* (Perty); *Phorostoma* (R.-D.) incl. *Billœa* and *Myostoma* (R.-D.); *Mintho* (R.-D.)=*Wiedemannia* (Meig.); *Nyctia* (R.-D.) incl. *Anthracia* (Meig.) and *Megerlea* (R.-D.); *Phyto* (R.-D.)=*Ptilocera* (R.-D.); *Rhinophora* (R.-D.)=*Stevenia* (R.-D.); *Scopolia* (R.-D.) incl. *Wagneria* (R.-D.) and *Brachystylum*

(Macq.); *Degeeria* (R.-D.) incl. *Medina* and *Elophoria* (R.-D); *Macquartia* (R.-D.) incl. *Erebia* (R.-D.), *Zophomyia* (Macq.), *Amedea*, and *Albinia* (R.-D.); *Melia* (R.-D.)=*Actia* (Meig.); *Roeselia* (R.-D.)=*Eurigaster* (Macq.); *Myobia* (R.-D.)=*Solieria* (R.-D.); *Leskia* (R.-D.) incl. *Pyrosia* (Rond.) and *Fischeria* (R.-D.); *Phorocera* (R.-D.) incl. *Chetogena*, *Leucanipa*, *Pericheta*, *Polycheta*, *Istocheta*, *Campylocheta*, and *Botria* (Rond.), and *Phryxe*, *Pales*, and *Ophelia* (R.-D.); *Meigenia* (R.-D.)=*Spylosia* (Rond.); *Nemoræa* (R.-D.) incl. *Erigone*, *Anthophila*, *Eurithia*, *Meriania*, *Panzeria*, *Ernestia*, *Winthemia*, *Mericia*, and *Fausta* (R.-D.), and *Platychira*, *Chetolyga*, *Nemorilla*, and *Chetina* (Rond.); *Germaria* (R.-D.)=*Illigera* (Meig.); *Olivieria* (R.-D.)=*Panzeria* (Meig.); *Aphria* (R.-D.) incl. *Olivieria* (Macq.) and *Rhychosia* (Macq.); *Uromyia* (R.-D.) incl. *Weberia* (R.-D.); *Bessiria* (R.-D.)=*Wahlbergia* (Zett.); *Alophora* (R.-D.) incl. *Hyalomyia* (R.-D.); *Hylemyia* (Macq.) incl. *Hydrophorina* and *Eginia* (R.-D.); *Spilogaster* (Macq.) incl. *Mydina*, *Caricea*, *Rohrella*, *Mydæa*, *Fellæa*, and *Helina* (R.-D.); *Ochromyia* (Macq.) incl. *Phumosia*, *Ormia*, and *Palpostoma* (R.-D.); *Phryssopoda* (Macq.)=*Pekia* (R.-D.); *Scotiptera* (Macq.)=*Sophia* (R.-D.); *Cordyligaster* (Macq.)=*Megistogaster* (Macq.); *Gymnostylia* (Macq.) incl. *Macromyia*, *Harrisia*, and *Leschenaultia* (R.-D.); *Aculocera* (Macq.) incl. *Onuxicera* (Macq.); *Thryptocera* (Macq.) incl. *Neæra*, *Ramburia*, *Actia*, *Elfia*, *Cerantia*, *Vafrellia*, *Herbstia*, *Ceromyia*, and *Osmæa* (R.-D.), and *Bigononichcta* (Rond.); *Lydella* (Macq.) incl. *Olinda* and *Platymyia* (R.-D.); *Masicera* (Macq.) incl. *Phryxe*, *Lydella*, and *Sturmia* (R.-D.), *Senometopia* (Macq.), and *Erycia*, *Hubneria*, and *Melibæa* (R.-D.); *Zophomyia* (Macq.) incl. *Erebia* (Macq.), *Minella* (R.-D.), and *Avernia* (Rond.); *Cuphocera* (Macq.) =*Palpibraca* (Rond.); *Micropalpus* (Macq.) incl. *Anthophila*, *Linnemyia*, *Bonellia*, *Bonnetia*, and *Marshamia* (R.-D.); *Hilarella* (Zett.)=*Megæra* (R.-D.); *Macronychia* (Zett.) incl. *Oodigaster* (Macq.) and *Amobia* (R.-D.); *Gymnochæta* (Zett.)=*Chrysomyia* (R.-D.); *Glossina* (Wied.)=*Nemorhina* (R.-D.); *Homalomyia* (Bouché) incl. *Philinta* and *Fannia* (R.-D.); *Brauëria* (Schin.)=*Zelleria* (Egg.); *Eggeria* (Schin.)=*Spoggosia* (Rond.).

Tachinides.

Tachina forcipata (Macq., Rond.), the type of Rondani's genus *Pyragrura*, is distinct from Meigen's *T. forcipata*; Rondani proposes for it the name of *P. uncinata* (Atti Soc. Ital. Sci. Nat. xi. p. 43).

Ptilocheta (Rond.). Rondani (Atti Soc. Ital. Sci. Nat. xi. pp. 44, 45) transfers this genus from his Dexiinæ to his Tachininæ, and publishes a revision of that portion of his tabular synopsis of the genera of this subfamily, including *Ptilocheta* and the allied forms.

Rondani (Atti Soc. Ital. Sci. Nat. xi. p. 50) refers his genera *Anthracomyia* and *Melanomyia* to *Morinia*, of which he gives the characters, at the same time separating therefrom his species *M. celer*, which he takes as the type of the genus *Metopisena* proposed by him in vol. v. of his 'Prodromus.'

New genera and species :—

Graphogaster, g. n., Rondani, Atti Soc. Ital. Sci. Nat. xi. p. 46. Allied to *Leucostoma*; cheeks neither setigerous nor pilose; frontal series of bristles descending upon the cheeks as far as the base of the arista; scutellum with several setæ. Sp. *G. vestitus*, sp. n., Rondani, *l. c.* p. 46, Parma.

Catharosia, g. n., Rondani, *l. c.* p. 46. Allied to preceding; scutellum quadrisetose. Sp. *Thereva pygmæa* (Fall.).

Cristofaria, g. n., Rondani, *l. c.* p. 48. Allied to *Cystogaster*; eyes naked; antennæ short, joint 3 nearly twice as long as preceding; facial carinæ fringed beneath with a row of bristles, none decussated; abdomen setulose; wings with veins 4 and 5 united near apical margin, 3 attaining costal before the union of 4 and 5; posterior transverse vein about equidistant from the anterior and the curvature of 5. Sp. *Cystogaster globulus* (Meig.).

Bothrophora, g. n., Schiner, Reise der Novara, Zool., Dipt. p. 317. Allied to *Rutilia*. Sp. *B. zelebori*, sp. n., Schiner, *l. c.* p. 317, New Zealand.

Atacta, g. n., Schiner, *l. c.* p. 328. Allied to *Gonia*. Sp. *A. brasiliensis*, sp. n., Schiner, *l. c.* p. 328, Brazil.

Saundersia, g. n., Schiner *l. c.* p. 333. Allied to *Echinomyia*. Sp. *Micropalpus ornatus* (Macq.), *M. flavitarsis* (Macq.), *M. dorsopunctatus* (Macq.), *M. macula* (Macq.), *M. rufipennis* (Macq.), and *Hystricia nigriventris* (Macq.). Sp. n. *S. tarsalis*, Schiner, *l. c.* p. 334, *S. picta*, Schin. *l. c.* p. 335, *S. inornata*, Schin. ibid., *S. rufa*, Schin. ibid., *S. pulverulenta*, Schin. ibid., and *S. affinis*, Schin. *l. c.* p. 336, South America.

Eurigaster (sic) *septentrionalis*, Walker, Lord's Naturalist in Vancouver's Island &c. ii. p. 339, Vancouver's Island.

Rutilia leucosticta, Schiner, Reise der Novara, Zool., Dipt. p. 319, New Zealand.

Aporia nitens, Schiner, *l. c.* p. 320, and *A. caudata*, Schiner, ibid., South America.

Trichodura recta, Schiner, *l. c.* p. 320, South America, and *T. vidua*, Schiner, *l. c.* p. 321, Brazil.

Microphthalma capensis, Schiner, *l. c.* p. 322, Cape of Good Hope.

Aculocera grisea, Kowarz, *l. c.* p. 221, Losoncz.

Epalpus rostratus, Rondani, Ann. Soc. Nat. Modena, iii. p. 25, pl. 4. figs. 1, 2 (head and antenna), Mendoza.

Loewia sycophanta, Schiner, *l. c.* p. 323, Cape of Good Hope.

Chlorogaster rufipes, Schiner, *l. c.* p. 323, New Zealand.

Redtenbacheria brasiliensis, Schiner, *l. c.* p. 323, Brazil.

Miltogramma brevipennis, Schiner, *l. c.* p. 324, Brazil.

Miltogramma punctatella, Rondani, Atti. Soc. Ital. Sci. Nat. xi. p. 40, Parma.

Masicera testacicornis (sic), Rondani, *l. c.* p. 41, Parma.

Psalida meridiana, Rondani, *l. c.* p. 45, Palermo.

Demoticus chilensis, Schiner, *l. c.* p. 324, Chili; *D. australensis*, Schiner, *l. c.* p. 325, Auckland.

Phorocera heros, Schiner, *l. c.* p. 325, Rio de Janeiro; *P. biserialis*, Schiner, *l. c.* p. 326, Brazil.

Meigenia flavipes, Schiner, *l. c.* p. 326, and *M. cingulata*, Schiner, *l. c.* p. 327, Brazil.

Exorista trichoparcia, Schiner, *l. c.* p. 327, and *E. optica*, Schiner, ibid., Brazil.—*Exorista vivax*, Rondani, *l. c.* p. 38, Parma.

Chetogena (*Spoggosia*) *penicillaris*, Rondani, *l. c.* p. 39, Italy.

Micropalpus clausus, Rondani, *l. c.* p. 38, Parma.

Cnephalia americana, Schiner, *l. c.* p. 327, Chili.

Nemoræa capensis, Schiner, *l. c.* p. 329, Cape of Good Hope; *N. brasiliensis*, Schiner, ibid., Brazil.

Trichophora analis, Schiner, *l. c.* p. 330, South America.

Echinomyia pilifrons, Schiner, *l. c.* p. 331, Chili.

Echinomyia rubidigaster, Rondani, *l. c.* p. 37, Sicily; *E. tricondyla*, Rondani, ibid., Parma.

Stevenia sicula, Rondani, *l. c.* p. 47, Palermo.

Hystricia orientalis, Schiner, *l. c.* p. 331, Auckland; *H. plagiata*, Schiner, *l. c.* p. 332, and *H. tarsata*, Schiner, *l. c.* p. 333, South America.

Blepharipeza tarsalis, Schiner, *l. c.* p. 336, South America.

Dejeania argyropus, Schiner, *l. c.* p. 337, South America.

Alophora capensis, Schiner, *l. c.* p. 337, Cape of Good Hope.

Hyalomyia unicolor, Rondani, *l. c.* p. 47, Parma.

Elomyia parva, Rondani, *l. c.* p. 48, Parma.

Anthomyides.

Anthomyia ceparum. On the introduction of this species into the United States see Walsh, Pract. Entom. ii. p. 64.

The voiding of the larva of an *Anthomyia* from the human intestines is recorded in Ent. M. Mag. v. p. 144.

Pygophora, g. n., Schiner, Reise der Novara, Zool., Dipt. p. 295. Allied to *Cœnosia*. Sp. *P. apicalis*, sp. n., Schiner, *l. c.* p. 295, Sydney.

New species :—

Myopina capensis, Schiner, *l. c.* p. 294, Cape of Good Hope.

Atherigona orientalis, Schiner, *l. c.* p. 295, Nicobars (Tellnschong).

Lispe. Schiner describes the following new species of this genus:—*L. taitensis*, *l. c.* p. 296, Taiti; *L. sinensis*, ibid., Shanghai; *L. nicobarensis*, *l. c.* p. 297, Tellnschong; *L. sydneyensis*, ibid., Sydney; *L. tetrastigma*, ibid., Ceylon.

Anthomyia vicarians, Schiner, *l. c.* p. 298, Sydney; *A. lindigii*, Schiner, ibid., South America.

Spilogaster. Schiner describes the following new species of this genus:—*S. novaræ*, *l. c.* p. 299, Cape of Good Hope; *S. bipunctata*, ibid., and *S. adelpha*, *l. c.* p. 300, South America; *S. pœciloptera*, ibid., Brazil; *S. monacha*, *l. c.* p. 301, *S. principalis*, ibid., and *S. grandis*, Schiner, *l. c.* p. 302, South America.

Myantha fusconotata, Rondani, Ann. Soc. Nat. Modena, iii. p. 27, Mendoza.

Chortophila liturata, Rondani, *l. c.* p. 28, Buenos Ayres.

Arcia melas, Schiner, *l. c.* p. 302, Auckland; *A. semiclausa*, Schiner, ibid., Chili.

Sarcophagides.

Laboulbène notices the occurrence of *Lucilia hominovorax* in Mexico. Thirty larvæ were removed from one patient. Lucas & Sallé also remark upon this subject. Bull. Soc. Ent. Fr. 1868, pp. 36–37. See also Lucas, *l. c.* p. 40.

New species :—

Calliphora ochracea, Schiner, Reise der Novara, Zool., Dipt. p. 307, Sydney; and *C. semiatra*, Schiner, *l. c.* p. 308, Columbia.

Idia murina, Schiner, *l. c.* p. 309, New Zealand.

Onesia americana, Schiner, *l. c.* p. 311, Chili.

Cynomyia madeirensis, Schiner, *l. c.* p. 312, Madeira.

Sarcophaga oralis, Rondani, Ann. Soc. Nat. Modena, iii. p. 26, Bahia.

Sarchophaga dichroa, Schiner, *l. c.* p. 313, Chili; *S. xanthophora*, Schiner, ibid., South America; *S. truncata*, Schiner, *l. c.* p. 314, Chili; *S. amorosa*, Schiner, ibid., Brazil; *S. taitensis*, Schiner, ibid., Taiti.

Sarcophila alba, Schiner, *l. c.* p. 315, Ceylon; *S. femoralis*, Schiner, ibid., Brazil.

Sarcophila impunctata, Rondani, Atti Soc. Ital. Sci. Nat. xi. p. 49, Parma.

Muscides.

Schiner records his observation that an undescribed species of *Frontina* in laying its eggs upon the larva of a *Tenthredo* attacked the latter openly and did not oviposit until the larva was tired out with its struggles.

A species of *Musca*, called at Catagallo the "Warega," is said by Peckolt to lay its eggs in the skin of both men and animals. Smith, Trans. Ent. Soc. Lond. 1868, p. 135.

New species:—

Cyrtoneura brevis, Schiner, Reise der Novara, Zool., Dipt. p. 303, South America.

Graphomyia americana, Schiner, *l. c.* p. 304, South America.

Lucilia pavonina, Schiner, *l. c.* p. 305, Nicobars (Tellnschong).

Rhynchomyia plumata, Schiner, *l. c.* p. 315, Brazil; *R. aberrans*, Schiner, *l. c.* p. 316, Shanghai.

Somomyia juvenis, Rondani, Atti Soc. Ital. Sci. Nat. xi. p. 51, Italy.

Musca frontalis, Rondani, *l. c.* p. 51, Italy (♂ = *aurifacies*, R.-Desv., ♀ = *campestris*, R.-Desv.); *M. minima*, Rondani, *l. c.* p. 52, Parma.

Amenia parva, Schiner, *l. c.* p. 316, New Zealand.

Helomyzides.

Sciomyzinæ. Rondani (Atti Soc. Ital. Sci. Nat. xi. pp. 199–256) publishes a synopsis of the Italian species of this group, in which he admits 15 genera, tabulated as follows (*l. c.* pp. 200–203):—

I. Eyes oblong, subhorizontal; face entirely inclined from the antennæ to the mouth ..... 1. Pelidnoptera (Rond.).

II. Eyes rounded or ovate, not horizontal; face not inclined or but slightly so.

A. Longitudinal veins 4 and 5 very convergent outwardly, approximate at apex ..... 2. Eggizoneura (Rond.).

B. Longitudinal veins 4 and 5 scarcely, if at all, convergent, sometimes slightly divergent at apex.

1. Scutellum with only 2 setæ.

a. Joint 2 of antennæ about as long as 3; arista closely pilosulous, penultimate joint not elongate. 3. Dichetophora, g.n.

b. Joint 2 of antennæ longer than 3; arista nearly naked. 4. Sepedon (Lat.).

2. Scutellum with 4 setæ.

a. Epistome without a buccula.

* Outer transverse vein oblique and strongly sinuous, sigmoid.
5. Elgiva (Meg.).

† Outer transverse vein scarcely, if at all, sinuous and oblique.
a. Antennæ with a pencil of setæ at apex.
6. Coremacera, g. n.

β. Antennæ with no apical pencil.
a. Arista nearly equally pilose above and beneath, or pubescent, or nearly naked.
** Joint 2 of antennæ with some more distinct setæ both above and beneath .. 7. Tetanocera (Dum.).
†† Joint 2 with no more distinct setæ, at least above.
8. Sciomyza (Fall.).

b. Arista distinctly pilose only above.
9. Ctenulus, g. n.

b. Epistome furnished with a more or less distinct buccula.
* Longitudinal vein 7 much abbreviated.
a. Joint 1 of antennæ at least as long as 2; 3 much elongated.
10. Lauxania (Lat.).

β. Joint 1 of antennæ shorter than 2, sometimes very short; 3 not elongated, rounded at apex.
a. Face flat or slightly excavated, not gibbous, its sides naked ..... 11. Sapromyza (Fall.).
b. Face tumid or gibboso-subcarinate, its sides fringed with a row of setæ ..... 12. Prosopomyia (Loew).

† Longitudinal vein 7 produced to margin of wing.
a. Basal cells not produced beyond the origin of longitudinal vein 4.
a. Costa not spinulous .... 13. Exocheila, g. n.
b. Costa spinulous ..... 14. Actora (Meig.).

β. Basal cells produced beyond origin of longitudinal vein 4.
15. Dryomyza (Fall.).

The types of these genera as given by Rondani are :—1. *Musca nigripennis* (Fab.); 2. *Lucina fasciata* (Meig.); 4. *Syrphus sphegæus* (Fab.); 5. *Scat. dorsalis* (Fab.); 7. *Scat. chærophylli* (Fab.); 8. *Sciom. obtusa* (Fall.); 10. *Musca cylindricornis* (Fab.); 11. *Sapr. bipunctata* (Meig.); 12. *P. pallida* (Loew); 14. *A. æstuum* (Meig.); 15. *Musca flaveola* (Fab.).

New genera and species:—

Neottiophilum, g. n., Frauenfeld, Verh. zool.-bot. Ges. in Wien, xviii. p. 895. Buccal margin with bristles; eyes large, naked; antennæ with joint 3 oval, and the bristle naked; pronotum convex, with strong bristles at the sides and behind; scutellum flat, triangular, with 4 bristles; a strong bristle at apex of middle tibiæ. Sp. *N. fringillarum*, sp. n., Frauenfeld, *l. c.* p. 895, from the nest of a Chaffinch.

Griphoneura, g. n., Schiner, Reise der Novara, Zool., Dipt. p. 281. Allied to *Lauxania*. Sp. *G. imbuta* (Wied.); *G. ferruginea*, sp. n., Schiner, ibid., South America.

Dichetophora, g. n., Rondani, Atti Soc. Ital. Sci. Nat. xi. p. 206. (See table, p. 367.) Sp. *Scat. obliterata* (Fab.).

Coremacera, g. n., Rondani, *l. c.* p. 212 (see table above), = *Limnia*, p. (R.-

Desv.). Sp. *Scat. cincta, stictica,* and *marginata* (Fab.), and *Tetan. bivittata* (Macq.).

Ctenulus, g. n., Rondani, *l. c.* p. 232. (See table, p. 368.) Sp. *Opomyza pectoralis* (Stæg.)

Exocheila, g. n., Rondani, *l. c.* p. 252 (see table p. 368), = *Heterocheila* (Rond. olim). Sp. *Heterom. baccata* (Fall.).

Limnia capensis, Schiner, Reise der Novara, Zool., Dipt. p. 234, Cape of Good Hope; *L. transmarina,* Schiner, ibid., Auckland.

Sepedon brasiliensis, Schiner, *l. c.* p. 235, Brazil.

Platycephala transatlantica, Schiner, *l. c.* p. 245, and *P. obscura,* Schiner, ibid., South America.

Chyliza consanguinea, Schiner, *l. c.* p. 246, South America.

Eggizoneura maculipes, Rondani, *l. c.* p. 205, Naples and Ireland.

Elgiva lateritia, Rondani, *l. c.* p. 211, Italy.

Tetanocera. Rondani (*l. c.*) describes the following new Italian species of this genus:—[Subg. Oregocera, Rond.] *T. cribrata,* p. 218, Piedmont: [Subg. Tetanocera] *T. foveolata,* p. 221, Parma; *T. punctifrons,* p. 222, Parma and Piedmont; *T. nigricosta,* p. 223, Apennines and Piedmont.

Sciomyza majuscula, Rondani, *l. c.* p. 228, Parma; *S. albicarpa,* Rondani, *l. c.* p. 231, Parma, *S. pallidicarpa,* Rondani, ibid., Trentino.

Sciomyza armillata, Rondani, Ann. Soc. Nat. Modena, iii. p. 28, Buenos Ayres.

Sapromyza. Of this genus Rondani (Atti Soc. Ital. Sci. Nat. xi.) describes the following new Italian species:—*S. fuliginea,* p. 239, Piedmont; *S. luteiventris,* p. 240, Parma; *S. trispina,* p. 241, Parma; *S. punctiventris,* p. 242, Parma; *S. tinctiventris,* ibid., Tuscany and Piedmont; *S. plumicheta,* p. 243, Trentino and Piedmont; *S. rectinervis,* ibid., Parma; *S. dilecta,* p. 244, Parma; *S. punctifrons,* p. 245, Parma and Piedmont; *S. acuticornis,* p. 247, Piedmont; *S. albifrons* (Bell. MS.), Piedmont; *S. palpella,* p. 248, Parma; *S. bisigillata* (Bell. MS.), p. 250, Piedmont; *S. bisbinotata,* ibid. (=4-*punctata,* Zett. nec Linn.), Trentino.

Sapromyza. Schiner describes the following new species of this genus:—*S. decora, l. c.* p. 277, New Zealand; *S. sciomyzina, l. c.* p. 278, New Zealand; *S. insularis,* ibid., Taiti; *S. œstrachion,* ibid., Cape of Good Hope; *S. chilensis,* ibid., Chili; *S. ornata, l. c.* p. 279, South America; *S. pœcila,* ibid., Nicobars (Sambelong); *S. distinctissima, l. c.* p. 280, and *S. gigas,* ibid., South America.

Phycodroma sydneyensis, Schiner, *l. c.* p. 231, Sydney.

Hetoromyza apicalis, Schiner, *l. c.* p. 232, South America.

Lauxania capucina, Schiner, *l. c.* p. 282, Taiti.

Physegenua ferruginea, Schiner, *l. c.* p. 277, South America.

Borborides.

Anomioptera, g. n., Schiner, Reise der Novara, Zool., Dipt. p. 230. Sp. *A. picta,* sp. n., Schiner, *l. c.* p. 230, Sydney.

Ortalides.

Loew (Zeitschr. ges. Naturw. xxxii. pp. 1–11) publishes a revision of the European species of Ortalidæ, which he divides into two main sections, and the first of these into 5, and the

second into 2 groups. The first section has the first longitudinal vein setose or distinctly hairy, and includes the following groups:—

1. *Pyrgotina*, with an inflated ovipositor and no ocelli, in the European and N. American forms; 2, *Pterocallina*, with the head very broad in proportion to its height; 3. *Ortalina*, with a strong bristle on both the anterior and middle epimera; 4. *Cephalina*, with a bristle only on the middle epimera; and 5. *Platystomina*, with no bristles on the epimera. The two groups of the second section are the *Ulidina*, with the femora unarmed, and the *Richardina*, with spinous femora: the latter are not represented in Europe. The genera belonging to these groups are briefly characterized by Loew, and the European species are indicated. The new species described are 15 in number.

Rondani calls attention to the fact that Macquart has described two exotic species of *Tephritis* under the name of *stellata*, already appropriated by Rossi. He proposes the name of *T. siderata* for the species described in Dipt. Exot. ii. and *T. radiosa* for that described in the 4th supplement to that work. (Ann. Soc. Nat. Modena, iii. p. 31, note.)

Bach describes the habits and natural history of *Spilographa cerasi* (Linn.). Towards the end of May the ♀ lays her eggs in the cherries by inserting her ovipositor near the peduncle. The larva when hatched eats obliquely in towards the stone. When full-grown the larva quits its cherry by the same passage, falls to the ground, and changes to the pupa at a depth of about an inch in the ground. Deep digging of the ground under the trees in the spring, or pouring acid and other corrosive fluids upon it immediately after the cherries have been gathered, are recommended as the best means of destroying this insect. (Verh. naturh. Ver. preuss. Rheinl. und Westph. 1868, Corr.-bl. p. 58.)

Orellia bucchichi (Frauenf.). Frauenfeld describes the transformations of this species from the observations of Bucchich. The larva lives in the fruit of *Zizyphus*. Verh. zool.-bot. Ges. in Wien, xviii. pp. 154–156.

Urophora stigma (Loew). Frauenfeld describes the transformations of this species, of which the larvæ were obtained in the heads of *Achillea millefolium*. Verh. zool.-bot. Gesellsch. in Wien, xviii. pp. 153, 154.

A species of *Trypeta*, called the "Berna" fly, deposits its eggs in the wounds of men and animals; it has the apical segment of the abdomen elongated, forming an ovipositor, with which it introduces its eggs into the nostrils of the negroes in Brazil, producing serious effects. Smith (from Peckolt's notes), Trans. Ent. Soc. Lond. 1868, p. 136.

Ortalis flexa (Wied.) destructive to onions. See Shimer, Pract. Entom. i. p. 4, and Walsh, *l. c.* ii. p. 64.

New genera:—

Pterotænia, g. n., Rondani, Ann. Soc. Nat. Modena, iii. p. 28. Allied to *Herina* and *Myennis* (R.-Desv.); forehead not distinctly produced beyond eyes; face subperpendicular; antennæ with joint 3 elongate, 2 not longer than broad; arista naked; scutellum 4-setose; wings with vein 2 produced beyond anterior transverse vein; 4 and 5 scarcely convergent outwards; posterior basal cell with its lower angle much elongated. Sp. *Ortalis fasciata* (Wied.).

Strobelia, g. n., Rondani, Ann. Soc. Nat. Modena, iii. p. 29, pl. 4. figs. 3–5 (head and antennæ). Allied to *Trypeta*; forehead much inclined; antennæ inserted below middle of eyes, arista naked; proboscis not bigeniculate; scutellum 4-setose; wings with costal spinule strong, veins 2 and 4 ciliate, 4 and 5 straight, parallel outwardly, intermediate transverse veins not twice as far from the base as from the apex of the cell. Sp. *S. baccharidis*, sp. n., Rondani, *l. c.* p. 29, Buenos Ayres; *S. rubiginosa*, sp. n., Rond. *l. c.* p. 30, Mendoza.

Rhinotora, g. n., Schiner, Reise der Novara, Zool., Dipt. p. 233. Allied to *Rhopalomera*. Sp. *R. pluricellata*, sp. n., Schiner, *l. c.* p. 233, and *R. mutica*, sp. n., Schiner, *l. c.* p. 234, Brazil.

Anastrepha, g. n., Schiner, *l. c.* p. 263. Allied to *Acidia*. Sp. *Trypeta suspensa* (Loew); *A. munda*, sp. n., Schiner, *l. c.* p. 264, and *A. striata*, sp. n., Schiner, ibid., South America.

Icaria, g. n., Schiner, *l. c.* p. 276. Wings very broad, nearly round. Sp. *T. sparsa* (Wied.); *I. frauenfeldi*, sp. n., Schiner, *l. c.* p. 276, Cape of Good Hope; and *I. distincta*, sp. n., Schiner, ibid., South America.

Tetrapleura, g. n., Schiner, *l. c.* p. 289. Allied to *Camptoneura*; head angular (almost stalked). Sp. *T. picta*, sp. n., Schiner, *l. c.* p. 289, South America.

Rhadinomyia, g. n., Schiner, *l. c.* p. 290. Sp. *R. orientalis*, sp. n., Schiner, *l. c.* p. 290, Batavia.

New species:—

Nerius. Schiner (Reise der Novara, Zool., Dipt.) describes the following new species of this genus:—*N. xanthopus*, p. 247, and *N. ochraceus*, *l. c.* p. 248, South America; *N. inermis*, ibid., Nicobars (Tellnschong); *N. pluricellatus*, Schiner, ibid., South America.

Dorycera scalaris, Loew, Zeitschr. ges. Naturw. xxxii. p. 9, Spain; *D. brevis*, Loew, ibid., Greece.

Ortalis genualis, Loew, *l. c.* p. 9, Sarepta; *O. dominula*, Loew, *l. c.* p. 10, Spain; and *O. aspersa*, Loew, ibid., Spain.

Dacus frauenfeldi, Schiner, *l. c.* p. 262, Stuart's Islands.

Acidia soror, Schiner, *l. c.* p. 264, Batavia.

Spilographa nova, Schiner, *l. c.* p. 264, Chili; *S. metallica*, Schiner, *l. c.* p. 265, South America.

Œdaspis frauenfeldi, Schiner, *l. c.* p. 266, Brazil; and *O. leucotricha*, Schiner, ibid., South America.

Sphenella sinensis, Schiner, *l. c.* p. 267, Shanghai; *S. indica*, Schiner, ibid., Madras; *S. pœcila*, Schiner, *l. c.* p. 268, Chili.

Tephritis. Schiner describes the following new species of this genus:—*T. acroleuca*, *l. c.* p. 268, Sydney; *T. novaræ*, *l. c.* p. 269, Chili; *T. cosmia*, ibid., Madeira; *T. asteria*, *l. c.* p. 270, and *T. diespasmena*, *l. c.* p. 271, Chili; *T. pelia*, ibid., Sydney; *T. brahma*, *l. c.* p. 272, Madras; and *T. meleagris*, ibid., Chili.

Tephritis vittipes, Rondani, *l. c.* p. 30, Mendoza.

Oxyphora aberrans, Schiner, *l. c.* p. 273, Columbia; *O. pœcilosoma*, Schiner, *l. c.* p. 274, South America; *O. malaica*, Schiner, ibid., Ceylon.

Carphotricha vespillo, Schiner, *l. c.* p. 275, South America.

Amethysa propinqua, Schiner, *l. c.* p. 283, *A. latifascia*, Schiner, ibid., and *A. basalis*, Schiner, *l. c.* p. 284, South America.

Lamprogaster frauenfeldi, Schiner, *l. c.* p. 285, Nankauri, Bonebe, and Batavia.

Anacampta munda, Loew, Zeits. ges. Naturw. xxxii. p. 10, Sarepta.

Platystoma subtilis, Loew, *l. c.* p. 10, Sicily; *P. provincialis*, Loew, ibid., Provence; *P. biseta*, Loew, ibid., Hungary; *P. œnescens* and *P. gilvipes*, Loew, ibid., Sarepta.

Platystoma parvula, Schiner, *l. c.* p. 286, Batavia.

Pterocalla scutellata, Schiner, *l. c.* p. 286; *P. tarsata*, Schiner, *l. c.* p. 287, and *P. rondanii*, Schiner, ibid., South America.

Senopterina eques, Schiner, *l. c.* p. 288, Stuart Islands; *S. bataviensis*, Schiner, ibid., Batavia; *S. flavipes*, Schiner, ibid., Singapore; *S. grandis*, Schiner, *l. c.* p. 289, Chili.

Empyelocera xanthaspis, Loew, Berl. ent. Zeitschr. 1868, p. 175, South Russia.

Ulidia semiopaca, Loew, Zeits. ges. Naturw. xxxii. p. 10, France; *U. atrata*, Loew, *l. c.* p. 11, Greece.

Tetanops laticeps, Loew, Berl. ent. Zeitschr. 1868, p. 192, Sarepta.

Systata obliqua, Loew, *l. c.* p. 192, Cephalonia.

Sepsides.

New species:—

Calobata. Schiner (Reise der Novara, Zool., Dipt.) describes the following new species of this genus:—*C. diversa*, *l. c.* p. 250, *C. belzebub*, *l. c.* p. 251, *C. eques*, ibid., and *C. princeps*, ibid., South America; *C. stylophora*, *l. c.* p. 252, Nicobar Islands; *C. tetrastigma*, ibid., and *C. pœcila*, *l. c.* p. 254, South America.

Cardiacephala myrmex, Schiner, *l. c.* p. 254, and *C. nigra*, Schiner, *l. c.* p. 255, South America.

Michogaster. Schiner describes the following new species of this genus:—*M. ornatus*, *l. c.* p. 255, *M. niger*, *l. c.* p. 256, *M. costalis*, ibid., *M. erythrocephalus*, *l. c.* p. 257, *M. geniculatus*, ibid., *M. analis*, ibid., *M. nitens*, *l. c.* p. 258, and *M. sepsioides*, ibid., South America.

Odontomera varians, Schiner, *l. c.* p. 259, South America.

Richardia proxima, Schiner, *l. c.* p. 260, *R. flavipes*, Schiner, ibid., and *R. spectabilis*, Schiner, *l. c.* p. 261, South America.

Sepsis armata, Schiner, *l. c.* p. 261, Brazil; *S. hæmorrhoidalis*, Schiner, ibid., Brazil; *S. umbrifer*, Schiner, *l. c.* p. 262, and *S. pusio*, Schiner, ibid., South America.

Psilides.

Micropeza. Loew (Berl. ent. Zeitsch. 1868, pp. 161–164) discusses the characters of the European species of this genus. He admits *M. corrigiolata* (Linn.), with which *M. brevipennis* (Roser) is perhaps identical, *M. lateralis* (Meig.), to which he refers *Phantasma thoracicum* (R.-Desv.), and *M. kawallii* (Gimm.), and describes two new species. In an appendix Loew notices the exotic species of the genus (*l. c.* p. 167).

Loew (Berl. Ent. Zeitschr. 1868, pp. 393–394) indicates the characters of the true *Micropeza lateralis* (Meig.), and states that the South-European species, which he formerly identified with it, is really distinct. For this he proposes the name of *M. grallatrix*. The distinctive characters of the two

species are given (*l. c.* p. 394). *Calobata divisa* and *pectoralis* (Wied.), from Mexico, belong to *Micropeza*.

New species:—

Somatia, g. n., Schiner, Reise der Novara, Zool., Dipt. p. 245. Sp. *S. xanthomelas*, sp. n., Schiner, *l. c.* p. 246, South America.

Tanypeza claripennis, Schiner, *l. c.* p. 247, Brazil.

Micropeza annulata, Schiner, *l. c.* p. 249, *M. brasiliensis*, Schiner, ibid., *M. distincta*, Schiner, *l. c.* p. 250, and *M. appendiculata*, Schiner, ibid., South America.

Micropeza angustipennis, Loew, *l. c.* p. 164, and *M. cingulata*, Loew, *l. c.* p. 165, Sarepta.

Oscinides.

Chlorops scalaris (Meig.). Frauenfeld (Verh. zool.-bot. ges. in Wien, xviii. pp. 895–896) notices an excrescence upon *Triticum repens*, from which he bred this species. He identifies it with that which Giraud supposed to be produced on the same plant by *Ochthiphila polystigma* (Meig.); the latter supposition is probably erroneous.

Chlorops notata (Meig.). Frauenfeld (*l. c.* p. 900) records the occurrence of this species in troublesome numbers.

Chlorops nicobarensis, sp. n., Schiner, *l. c.* p. 244, Milu (Nicobar).

Geomyzides.

Acletoxenus, g. n., Frauenfeld, Verh. zool.-bot. Ges. in Wien, xviii. p. 152. Allied to *Gitona*, but the transverse veins distant from each other. Sp. *A. syrphoides*, sp. n., Frauenfeld, *l. c.* p. 152, parasitic on *Aleurodes*. See also *l. c.* pp. 897–899.

Heterochroa, g. n., Schiner, Reise der Novara, Zool., Dipt. p. 236. Sp. *H. picta*, Schiner, *l. c.* p. 236, and *H. bicolor*, Schiner, *l. c.* p. 237, Chili.

Curtonotum simplex, sp. n., Schiner, *l. c.* p. 237, Brazil.

Sigaloëssa dispar, sp. n., Schiner, *l. c.* p. 237, South America.

Drosophila. Schiner describes the following new species of this genus:—*D. coffeina*, *l. c.* p. 238, Taiti; *D. calloptera*, *l. c.* p. 239, South America; *D. pulchra*, ibid., South America; *D. insulana*, *l. c.* p. 240, Milu (Nicobar); *D. soror*, ibid., Columbia; *D. tarsata*, ibid., South America.

Diastata chilensis, sp. n., Schiner, *l. c.* p. 235, Chili.

Lobioptera argyrophenga, sp. n., Schiner, p. 291, South America.

Phytomyzides.

Agromyza atra (Meig.). The larva mines the leaves of *Iris pseudacorus*. Frauenfeld, Verh. zool.-bot. Ges. in Wien, xviii. p. 163.

Agromyza americana, sp. n., Schiner, Reise der Novara, Zool., Dipt. p. 290, and *A. xanthophora*, sp. n., Schiner, *l. c.* p. 291, South America.

Agromyza spirææ, sp. n., Kaltenbach, Verh. naturh. Ver. preuss. Rheinl. und Westph. 1867, p. 104. Allied to *A. reptans*; halteres yellowish white feet brownish yellow, hind tibiæ pale brown, femora dark brown; apex of wing between 3rd and 4th longitudinal veins. The larva mines the leaves of *Spiræa ulmaria*, *Geum urbanum*, and *Rubus idæus*.

Phytomyza ranunculi, sp. n., Kaltenbach, Verh. naturh. Ver. preuss. Rheinl. und Westph. 1867, p. 73. Pale yellow; joint 3 and seta of antennæ black; a point on the vertex, 3 streaks on the thorax, the metanotum below the scutellum, a larger and smaller spot on each side of the breast, the apical margin of the pale-brownish ovipositor, and all the tarsi brown or black; tibiæ and palpi brownish yellow. Length 1 line. The larva mines the leaves of various species of *Ranunculus*, especially *R. flammula, acris*, and *repens*.

Phytomyza rhinanthi, sp. n., Kaltenbach, *l. c.* p. 79. Allied to *P. stylata* (Meig.) and *P. varipes* (Macq.); blackish grey; head, proboscis, palpi, and antennæ yellow; ocellar spots and a spot on the orbit black; last segment of the abdomen with a yellow margin; ovipositor very long, shining black; legs black, coxæ and femora yellow; wings hyaline. Length of ♀ 1 line; ♂ smaller. The larva lives in the flower of *Rhinanthus minor*, and probably bores into the young seed-vessel.

Copromyza alternata, sp. n., Rondani, Ann. Soc. Nat. Modena, iii. p. 31, Buenos Ayres.

Elachiptera aberrans, sp. n., Schiner, *l. c.* p. 244, Columbia.

Hydromyzides.

Packard figures an *Ephydra* and its puparium, found with *Eristalis* inhabiting strong brine at some salt-works in Illinois. The puparium is furnished with a long, furcate process. A similar puparium has been obtained on the shores of Narragansett Bay (Amer. Natural. ii. 278, fig. 4). An *Ephydra* is also found in the Mono Salt Lake, California (Leconte, *l. c.* p. 329).

New species :—

Ectropa, g. n., Schiner, Reise der Novara, Zool., Dipt. p. 242. Allied to *Ochthera*. Sp. *E. viduata*, sp. n., Schiner, *l. c.* p. 243, Sydney.

Ochthera rotunda, Schiner, *l. c.* p. 243, Nicobars (Tellnschong).

Notiphila sinensis, Schiner, *l. c.* p. 241, Hong Kong; *N. triangulifera*, Schiner, ibid., South America.

Paralimna secunda, Schiner, *l. c.* p. 241, and *P. molossus*, Schiner, *l. c.* p. 242, South America.

Ephygrobia metallica, Schiner, *l. c.* p. 242, South America.

Ephydra ciligena, Rondani, Ann. Soc. Nat. Modena, iii. p. 32, Buenos Ayres.

Scatella sancti pauli, Schiner, *l. c.* p. 243, St. Paul.

Œstridæ.

O. Schneider notices (Sitzungsber. Isis, 1866, p. 89) two larvæ obtained from under the skin of the head of a young Sparrow, where they had produced two large hard tumours. According to Kirsch, they resemble the larva of *Hypoderma*, but differ from it in some respects, especially the absence of the circlet of spines and in the presence of two "speculia" above the mouth.

Cuterebra approximata, sp. n., Walker, Lord's Naturalist in Vancouver's Island &c. ii. p. 338, Vancouver's Island.

Syrphidæ.

Schiner (Reise der Novara, Zool., Dipt. pp. 339–340) notices the synonymy of the following genera of this family:—*Syrphus* (Fab.), incl. *Scæva* (Fab.) and *Lasiophthicus* (Rond.); *Eristalis* (Fab.) incl. *Cyphipelta* (Big.), *Senaspis* and *Priomerus* (Macq.), and *Simoides* (Loew); *Ceria* (Fab.) = *Sphiximorpha* (Rond.); *Volucella* (Geoff.) = *Ornidia* (Le P. & Serv.) and *Pterocera* (Macq.); *Milesia* (Lat.) = *Sphixea* (Rond.); *Sphecomyia* (Lat.) = *Tysenhausia* (Gorsky); *Helophilus* (Meig.), incl. *Lejops* and *Myathropa* (Rond.); *Mallota* (Meig.) = *Zetterstedtia* (Rond.); *Spilomyia* (Meig.) = *Temnostoma* (Le P. & Serv.) and *Calliprobola* (Rond.); *Microdon* (Meig.), incl. *Aphritis* (Lat.) and *Dimeraspis* (Newm.); *Syritta* (Le P. & Serv.) = *Coprina* (Zett.); *Plocota* (Le P. & Serv.) = *Dasymyia* (Egger); *Didea* (Macq.) = *Enica* (Meig.); *Megaspis* (Macq.), incl. *Dolichomerus* (Macq.); *Orthoneura* (Macq.) = *Campyneura* (Rond.); *Myolepta* (Newm.) = *Xylotœja* (Rond.); *Melithreptus* (Loew) = *Sphærophoria* (Macq.); *Chrysochlamys* (Rond.) = *Ferdinandea* (Rond.); *Pipiella* (Rond.) = *Heringia* (Rond.). The total number of described species of Syrphidæ is 1539, of which 586 inhabit Europe, 189 Asia, 132 Africa, 520 America, and 53 Australia. Of 59 species the native country is unknown.

Rondani (Atti Soc. Ital. Sci. Nat. xi. pp. 22–36) describes numerous Italian species of this family, and amongst them several described by Palma in a memoir published in the Annali dell' Accad. degli Aspiranti Natural. (Naples) for 1864, which the Recorder has not seen. These species are *Merodon obscuripennis* (Palma), p. 22; *M. annulatus* (Palma), ibid.; *Platycheirus pulchellus* (Palma), p. 26; *Syrphus affinis* (Palma), ibid.; *S. bisinuatus* (Palma), ibid.; *S. fuscus* (Palma), p. 27; *S. sinuatus* (Palma), ibid.; *Cheilosia brachyptera* (Palma), p. 31; *C. violacecozonata* (Palma), ibid.; and *Paragus intermedius* (Palma), p. 55: all from Naples and its vicinity.

Verrall publishes (Ent. M. Mag. v. pp. 7, 8) notes on five species of the genus *Syrphus*, recently detected by him in England.

Sanborn describes and figures the larva and pupa-case of *Microdon globosus* (Fab.). Proc. Bost. Soc. Nat. Hist. xii. p. 90.

Cheilosia scutellata (Fall.). Frauenfeld (Verh. zool.-bot. Ges. in Wien, xviii. pp. 161, 162) describes the larva of this species from *Polyporus*.

The pupa of an *Eristalis* has been found in brine at salt-works in Illinois. Packard in Amer. Natural. ii. p. 278, fig. 5.

Salpingogaster, g. n., Schiner, Reise der Novara, Zool., Dipt. p. 344. Allied to *Amathia*. Sp. *S. pygophora*, sp. n., Schiner, *l. c.* p. 344, South America; *S. macula*, sp. n., Schiner, *l. c.* p. 345, Chili; *S. niger*, sp. n., Schiner, ibid., South America.

New species:—

Bacha. Schiner (Reise der Novara, Zool., Dipt.) describes the following new species of this genus:—*B. gigantea*, *l. c.* p. 340, *B. brevipennis*, *l. c.* p. 341, *B. rugosifrons*, *l. c.* ibid., *B. pilipes*, *l. c.* p. 342, *B. phœoptera*, ibid., *B. livida*, *l. c.* p. 343, South America; *B. transatlantica*, Schiner, ibid., Brazil and Columbia.

Ocyptamus proximus, Schiner, *l. c.* p. 346, Brazil.

Melithreptus australensis, Schiner, *l. c.* p. 347, Sydney.

Mesogramma. Schiner describes the following new species of this genus:—*M. insignis*, *l. c.* p. 347, *M. hieroglyphica*, *l. c.* p. 348, *M. confusa*, *l. c.*

p. 349, *M. paragramma*, ibid., *M. nitida*, ibid., *M. soror*, *l. c.* p. 350, and *M. anthrax*, ibid., South America.

Syrphus sellenyi, Schiner, *l. c.* p. 352, Sydney; *S. æruginosifrons*, Schiner, ibid., South America.

Syrphus tridentatus, Rondani, Ann. Soc. Nat. Modena, iii. p. 24, Patagonia.

Phalacromyia prasina, Schiner, *l. c.* p. 354, South America; *P. pica*, Schiner, *l. c.* p. 355, Columbia; *P. nigriceps*, Schiner, ibid., Cape of Good Hope.

Volucella capensis, Schiner, *l. c.* p. 357, Cape of Good Hope.

Temnocera gibbera, Schiner, *l. c.* p. 358, Columbia; *T. frauenfeldi*, Schiner, ibid., Chili.

Helophilus latifrons, Schiner, *l. c.* p. 359, Auckland; *H. antipodus*, Schiner, ibid., Auckland.

Mallota xylotæformis, Schiner, *l. c.* p. 360, Chili.

Eristalis cosmius, Schiner, *l. c.* p. 362, South America; *E. philippii*, Schiner, *l. c.* p. 363, Chili; *E. curvipes*, Schiner, *l. c.* p. 363, Ceylon.

Plagiocera simplex, Schiner, *l. c.* p. 365, Brazil.

Xylota chloropyga, Schiner, *l. c.* p. 366, Columbia.

Syritta americana, Schiner, *l. c.* p. 367, South America; *S. aculeipes*, Schiner, ibid., Cape of Good Hope.

Eumerus nicobarensis, Schiner, *l. c.* p. 368, Fauri.

Eumerus sulcitibius, Rondani, Atti Soc. Ital. Sci. Nat. xi. p. 24, Parma.

Psilota femoralis, Schiner, *l. c.* p. 369, Sydney.

Cheilosia. Of this genus Rondani (*l. c.*) describes the following as new Italian species:—*C. erythrostoma*, p. 29, Italian Tyrol; *C. erytrocheila* (sic), ibid., Liguria; *C. honesta*, p. 30, Piedmontese Alps; *C. superciliata*, ibid., Sicily; and *C. albicheta*, p. 31 (=*albiseta*, Rond. nec Meig.).

Pipizella neuphritica, Rondani, *l. c.* p. 34, Central Italy.

Paragus excalceatus, Rondani, *l. c.* p. 34, Central Italy.

Conopidæ.

Zodion pictum, sp. n., Schiner, Reise der Novara, Zool., Dipt. p. 370, Columbia.

Zodion subapertum, sp. n., Rondani, Atti Soc. Ital. Sci. Nat. xi. p. 56, in agro Lunensi.

Zodion pulchrum, sp. n., Loew, Berl. ent. Zeitschr. 1868, p. 384, Cilicia.

Hippoboscidæ.

Schiner (Reise der Novara, Zool., Dipt. p. 372) notices the genera proposed in this family. According to him *Hippobosca* (Linn.)=*Nirmomyia* (Nitzsch); *Oxypterum* (Leach)=*Anapera* (Meig.); *Olfersia* (Wied.)=*Feronia* (Leach); *Lipoptera* (Nitzsch) incl. *Ornithobia* (Meig.), *Alcephagus* (Gimm.), and *Hæmobora* (Curt.); and *Braula* (Nitzsch)=*Entomobia* (Costa). The described species are 79 in number, distributed as follows:—In Europe 18, in Asia 11, in Africa 16, in America 26, and in Australia 7, whilst the origin of 1 species is not known with certainty.

Ornithomyia pusilla, Schiner, Reise der Novara, Zool., Dipt. p. 374, Taiti; *O. fur*, Schiner, ibid., Cape of Good Hope; *O. stipituri*, Schiner, ibid., Sydney.

Nycteribiidæ.

Schiner (Reise der Novara, Zool., Dipt. p. 375) notices the genera of this family, and indicates the following synonymy:—*Nycteribia* (Lat.) incl. *Phthiridium* (Olf.) and *Celeripes* (Mont.); *Stylidia* (Westw.) and *Penicillidia*, *Listropoda*, and *Acrocholidea* (Kol.) belong to *Nycteribia*. Only 23 species have been described; of these, 12 are European, 4 Asiatic, 6 African, and 1 American. The origin of 1 species is unknown.

Aphaniptera.

Guyon has continued his history of the Chigoe (Rev. et Mag. de Zool. 1868), but has not yet completed it. The portions published last year relate chiefly to the medical aspects of the history of this insect, and contain many observations cited from previous writers, with a selection of cases from the author's experience.

NEUROPTERA.

Brauer, Friedrich. Zwei neue Myrmeleon-Arten. Verhandl. zool.-bot. Gesellsch. in Wien, Band xviii. pp. 189–190.

——. Verzeichniss der bis jetzt bekannten Neuropteren im Sinne Linné's. Erster Abschnitt. Ibid. pp. 359–416.

In this memoir Brauer commences a complete revision of the Neuroptera (Linn.) with a tabular synopsis of all the known genera and subgenera. He states that he keeps together the forms referred by Linnæus to the Neuroptera, although he regards the Pseudo-Neuroptera as truly belonging to the Orthoptera; he also places the Strepsiptera as a family of Neuroptera, with the object of attracting attention to them. The fossil forms are also tabulated.

——. Neue von Herrn Dr. G. Semper gesammelte Neuropteren. Ibid. pp. 263–268, Taf. 2 a.

Hagen, H. Monographie der Gattung *Berœa*, Steph. Stettiner entom. Zeitung, 1868, pp. 51–64.

——. Zur Kenntniss von *Psychomyia*, Latr. Ibid. pp. 259–266.

——. Monographie der Gattung *Dasystoma*, Rambur. Ibid. pp. 267–273.

MacLachlan, Robert. A monograph of the British Neuroptera-Planipennia. Trans. Ent. Soc. Lond. 1868, pp. 145–224, plates 8–11: July 1868.

An admirable memoir, which, with the author's previous monograph of the Trichoptera, furnishes a complete view of the present state of our knowledge of the British Neuroptera.

——. Contributions to a knowledge of European Trichoptera. (First part.) Ibid. pp. 289–308, plate 14.

Contains notices of various species and genera of Trichoptera and descriptions of some new forms.

MacLachlan, Robert. On some new forms of Trichopterous Insects from New Zealand; with a list of the species known to inhabit those colonies. Journ. Linn. Soc. Zool. vol. x. pp. 196–214, plate 2: September 25 and November 26, 1868.

——. Notes sur la *Monocentra lepidoptera* de Rambur (Phryganides). Annales Soc. Ent. France, 4e série, tome viii. pp. 749–752, pl. 12. figs. 7–13.

Rostock, M. Verzeichniss sächsischer Neuropteren. Berliner entom. Zeitschr. 1868, pp. 219–226.

A catalogue of the Neuroptera and Pseudo-Neuroptera of Saxony, chiefly collected in Lusatia and on the Elbe.

In the arrangement of these insects adopted by Brauer in his Synopsis of the genera of Neuroptera (Verh. zool.-bot. Ges. in Wien, xviii. pp. 361 *et seq.*) they are divided only into 5 families, of which the *Strepsiptera* are placed fourth. The others are *Megaloptera* (including the whole of the Planipennia), *Sialidæ*, *Phryganidæ*, and *Panorpidæ*. The Megaloptera are divided into the subfamilies *Myrmeleonidæ*, *Ascalaphidæ*, *Nemopteridæ*, *Mantispidæ*, *Nymphidæ*, *Osmylidæ*, *Hemerobidæ*, *Chrysopidæ*, and *Coniopterygidæ*, and the Phryganidæ into the ordinary subfamilies. The analytical table of the genera of true Neuroptera is given by Brauer, *l. c.* pp. 394–413.

MacLachlan has published (Trans. Ent. Soc. Lond. 1868, pp. 145–224) a monograph of the British Neuroptera Planipennia, characterized by the same careful elaboration which is manifested in his previous works. His classification, which agrees pretty closely with that generally received, needs only to be briefly indicated. He recognizes 3 divisions of the group, namely, *Sialina*, *Hemerobiina*, and *Panorpina*, which are further subdivided into families as follows:—

I. Sialina:—Fam. 1. Sialidæ (*Sialis*); 2. Raphidiidæ (*Raphidia*).

II. Hemerobiina:—Fam. 1. Hemerobiidæ (*Osmylus*, *Sisyra*, *Psectra*, *Drepanepteryx*, *Hemerobius*, *Megalomus*, *Micromus*); 2. Coniopterygidæ (*Coniopteryx*); 3. Chrysopidæ (*Chrysopa*, *Nothochrysa*, g.n.).

III. Panorpina:—Fam. 1. *Panorpidæ* (*Panorpa*); 2. Boreidæ (*Boreus*).

The illustrations consist almost entirely of outline figures of the wings and other characteristic details of the insects described. They are as follows:—*Sialis lutaria* (Linn.), pl. 8. figs. 1–1 *i*; *S. fuliginosa* (Pict.), figs. 2–2 *c*; *Raphidia notata* (Fab.), figs 3–3 *e*; *R. xanthostigma* (Schum.), figs. 4–4 *c*; *R. cognata* (Ramb.), wing, pl. 9. fig. 1; *R. maculicollis* (Steph.), wing, fig. 2; *Sisyra terminalis* (Curt.), wings, fig. 3; *Micromus variegatus* (Fab.), figs. 4–4 *b*; *Psectra diptera* (Burm.), fig. 5; *Hemerobius pellucidus* (Walk.), wing, pl. 10.

fig. 1; *H. inconspicuus* (sp. n.), *H. nitidulus* (Fab.), and *H. micans* (Oliv.), app. ♂, figs. 2–4; *H. humuli* (Linn.), figs. 5–5 *a*; *H. marginatus* (Steph.), app. ♂, figs. 6–6 *a*; *H. limbatus* (Wesm.), *H. subnebulosus* (Steph.), and *H. nervosus* (Fab.), app. ♂, figs. 7–9; *H. concinnus* (Steph.), figs. 10–10 *c*; *Megalomus hirtus* (Linn.), wings, fig. 11; *Coniopteryx psociformis* (Curt.) and *C. tineiformis* (Curt.), wings, pl. 11. figs. 1, 2; *Chrysopa vulgaris* (Schn.), wing, fig. 3; *C. alba* (Linn.), wing, fig. 4; *C. phyllochroma* (Wesm.), claw, fig. 4 *a*; *C. abbreviata* (Curt.), claw, fig. 4 *b*; *Nothochrysa capitata* (Fab.), wing, fig. 5; *Panorpa communis* (Linn.), end of abd. ♂, figs. 6, 6 *a*; *P. germanica* (Linn.), wing and abd., figs. 7–7 *b*; *P. cognata* (Ramb.), abd., figs. 8–8 *a*.

Rostock has published (Berl. ent. Zeitschr. 1868, pp. 220–224) a catalogue of Neuroptera collected in Saxony.

A list of five species of this order captured by him upon the Nicobar Islands is given by Frauenfeld (Verh. zool.-bot. Ges. in Wien, xviii. p. 291). The species were all undescribed.

Myrmeleontidæ.

Glenurus bicaruneulatus, sp. n., Brauer, Verh. zool.-bot. Ges. in Wien, xviii. p. 186, Pelew Islands.

Macronemurus bilineatus, sp. n., Brauer, *l. c.* p. 189, Dalmatia and Asia Minor.

Myrmeleon erberi, sp. n., Brauer, *l. c.* p. 190, Corfu.

Hemerobiidæ.

Boisduval (Ent. Hortic. pp. 359–362) gives a short general account of the natural history of the insects of this family.

Nothochrysa, g. n., MacLachlan, Trans. Ent. Soc. Lond. 1868, p. 195. Allied to *Chrysopa*; labrum more or less excised in front; 3rd cubital cell in fore wings nearly equally divided; antennæ shorter than wings. Sp. *Chrys. fulviceps* (Steph.)=*erythrocephalus* (Ramb.); *Hem. capitatus* (Fab.), pl. 11. fig. 5 (wing); also *italica* (Rossi), *stigmatica* and *neurodes* (Ramb.), *corsica* (Hag.), *æqualis* and *insignis* (Walk.), *variegata* (Burm.), *rufostigma*, *gigantea*, and *tripunctata* (MacL.). and *infecta* (Newm.).

Leucochrysa, g. n., MacLachlan, *l. c.* p. 208. Allied to preceding; labrum excised; antennæ very long; wings broad. Sp. *Chrys. varia* (Schn.), tropical America.

Hemerobius inconspicuus, sp. n., MacLachlan, Trans. Ent. Soc. Lond. 1868, p. 177, pl. 10. fig. 2 (♂ app.), South of England, Silesia, France; *H. atrifrons*, sp. n., MacLachlan, *l. c.* p. 184, Britain.

Coniopteryx hæmatica, sp. n., MacLachlan, *l. c.* p. 193, note, Italy.

Sialidæ.

Chauliodes disjunctus, sp. n., Walker, Lord's Naturalist in Vancouver's Island &c. ii. p. 334, Vancouver's Island.

Phryganeidæ.

MacLachlan remarks as follows upon various European forms of this family (Trans. Ent. Soc. Lond. 1868, pp. 289–308):—*Neuronia reticulata* (Zett.)=*lapponica* (Hag.), *l. c.* p. 290; *Stenophylax alpestris* (Kol.) occurs on the Pyrenees; MacLachlan describes the ♂ app. of the typical form (*l. c.*

p. 292); *Halesus* is divisible into 3 genera (*l. c.* p. 292); *Molannodes zelleri* (M'L.) occurs in Småland (*l. c.* p. 298); *Rhyacophila*, the characters presented by the anal appendages in the European species, of which 15 are recorded, are described and illustrated (*l. c.* pp. 304–307, pl. 14. figs. 9–17).

Hagen (Stett. ent. Zeit. 1868, pp. 51–64) publishes descriptions of the species of Stephens's genus *Berœa*, of which he recognizes 5, namely: 1. *B. melas* (Pict.); 2. *B. maurus* (M'L.); 3. *B. barbata* (Pict.); 4. *B. articularis* (Pict.); 5. *B. minuta* (Kolen.). *B. pullata* (M'L.), *Thya pygmæa* (Curt.), *Nais aterrima* (Brauer), *Rhyacophila penicillus* (Pict.), and *R. nigrocincta* (Pict.) are referred with more or less certainty to *B. melas*. *B. minuta* probably = *P. minuta* (Linn.); *P. minuta* (Fab.) is probably an *Hydroptila*. *B. albipes*, *marshamella* and *pygmæa* (Steph.) are unknown to the author. Hagen thinks that *P. funerea* (Vill.) belongs to *Berœa*, and remarks that, if so, Geoffroy has given the only extant description of the larva and case of a species of this genus.

MacLachlan publishes (Journ. Linn. Soc. Zool. x. pp. 196–214) some descriptions of new genera and species belonging to this group, and a list of the known species from New Zealand. The latter are only 20 in number. He notices 3 heliciform cases from New Zealand, which he conjectures may be formed by species of *Pycnocentria* (*l. c.* pp. 200, 201). A new grouping of the species of *Polycentropus* is given, *l. c.* p. 205.

Psychomyia. Hagen (Stett. ent. Zeit. 1868, pp. 259–266) describes the species of this genus, of which he admits the following:—*P. annulicornis* (Pict.), *P. phæopa* (Steph.), *P. reducta* (Hag.), and *P. fragilis* (Pict.). *Cyrnus urbanus* (Steph.) is a *Psychomyia*. *P. phæopa* (Hag. Ent. Ann. 1861) = *P. fragilis*, *P. ciliaris* (Hag. ibid.) = *annulicornis*, *Tinodes pusillus* (Kolen.) = *phæopa*.

Dasystoma. Hagen (*l. c.* pp. 267–273) publishes a monographic revision of the species of this genus, which he characterizes in detail. He admits 8 species, 3 of which are described as new. The known species are:—*D. maculatum* (Pict.), *D. togatum* (Hag.), *D. setiferum* (Pict.), *D. nigrum* (Brauer), and *D. microcephalum* (Pict.). The species are tabulated, *l. c.* p. 273.

Monocentra lepidoptera (Ramb.). MacLachlan (Ann. Soc. Ent. Fr. 4e viii. pp. 749–752) describes this species from the inspection of Rambur's type and of other specimens. The genus is allied to *Halesus*, but is distinguished from this and all other genera of the Limnephilides by the scaly covering of the wings. The posterior wings have a long and deep pouch, filled with scales stronger than the rest. The spurs are 1 . 3 . 3. M'Lachlan figures the anterior wing, an ordinary hair and a scale, the maxillary palpus, and the terminal segment of the abdomen in three positions, with separate figures of its appendages (pl. 12. figs. 7–13).

MacLachlan figures (Journ. Linn. Soc. Zool. x. pl. 2. fig. 1) the neuration of *Œconesus maori* (M'L.), and also (*l. c.* fig. 6) the anal appendages of *Notanatolica cognata* (M'L.).

Neuronia clathrata (Kol.). The occurrence of this species in Britain is noted by J. Chappell and M'Lachlan (Ent. M. Mag. iv. pp. 204, 205). *Stenophylax alpestris* (Kol.) has also been taken by Chappell and identified by MacLachlan (*l. c.* p. 205).

Enoicyla pusilla (Burm.). MacLachlan records the occurrence of larvæ

belonging to this terrestrial Trichopterous insect in Britain. Ent. M. Mag. v. p. 43. He also notices the breeding of the imago from these larvæ, *l. c.* pp. 143 & 170.

Agrypnia picta (Kolen.). MacLachlan records the occurrence of a specimen of this species at Highgate. Ent. M. Mag. v. p. 125.

Agapetus (*Rhyacophila*) *tomentosus* (Pict.). Hagen describes this species (Stett. ent. Zeit. 1868, p. 18).

Lucas notices a case supposed to be constructed by a Trichopterous insect, from a brook in the vicinity of Rio de Janeiro. It is of an elongated conical form, slightly curved, with its wider end open, and is composed chiefly of fragments of quartz and topaz. Bull. Soc. Ent. Fr. 1868, p. lxviii.

New genera and species:—

Olinx, g. n., MacLachlan, Journ. Linn. Soc. Zool. x. p. 196. Allied to *Silo* and *Pycnocentria*; tibial spurs 2, 2, 4, furnished with hairs or spines; anterior wings with a furrow more densely clothed with scales parallel to apical margin and running up near dorsal margin to base. Sp. *O. feredayi*, sp. n., M'Lachl. *l. c.* p. 198, pl. 2. fig. 2 (details), Canterbury, New Zealand.

Hydrobiosis, g. n., MacLachlan, *l. c.* p. 206. Allied to *Psilochorema*; maxillary palpi long and pubescent, labial palpi very small, with nearly equal joints; fore wings clothed with woolly pubescence, discoidal cell short and triangular, closed. Sp. *H. frater*, sp. n., M'Lachlan, *l. c.* p. 207, pl. 2. figs. 9 & 9 *a*, *b* (details), and *H. umbripennis*, sp. n., M'Lachl. *l. c.* p. 208, pl. 2. figs. 9 *c*, *d* (details), Canterbury, N. Z.

Arctopsyche, g. n., MacLachlan, Trans. Ent. Soc. Lond. 1868, p. 300, pl. 14. figs. 1–1 *c*. Allied to *Hydropsyche*; anterior wings with a straight, median, transverse veinlet; intermediate tibiæ and tarsi strongly dilated in ♀. Sp. *Aphelocheira ladogensis* (Kol.) and an undescribed species (*A. obesa*, Hag.).

Dolophilus, g. n., MacLachlan, *l. c.* p. 301. Allied to *Wormaldia*; anterior wings with apical forks 1–5. Sp. *D. copiosus*, sp. n., M'L. *l. c.* p. 303, pl. 14. fig. 2, Carinthia.

Œstropsis, g. n., Brauer, Verh. zool.-bot. Ges. in Wien, xviii. p. 263. Allied to *Polymorphanisus* (Walk.), but spurs 1, 3, 3. Sp. probably *P. vitrinus* (Hag.); n. sp. *Œ. semperi*, Brauer, *l. c.* p. 264, pl. 2A. fig. 1, Philippines.

Œstropsyche, g. n., Brauer, *l. c.* p. 265. Spurs (2?), 3, 3; fore wings with 8 apical calls, no transverse veins in the costal field; body short and stout. Sp. *Œ. palingenia*, sp. n., Brauer, *l. c.* p. 266, pl. 2A. fig. 2, Philippines.

Neuronia stâlii, MacLachlan, Trans. Ent. Soc. Lond. 1868, p. 289, Sweden.

Stenophylax algosus, MacLachlan, *l. c.* p. 290, pl. 14. fig. 6, South Lapland.

Halesus (*Drusus*) *muelleri*, MacLachlan, *l. c.* p. 292, pl. 14. fig. 3, Switzerland; *H.* (*D.*) *trifidus*, MacLachlan, *l. c.* p. 294, pl. 14. fig. 4, France; *H.* (*D.*) *rectus*, MacLachlan, *l. c.* p. 295, pl. 14. fig. 5, Pyrenees.

Sericostoma carinthiacum, MacLachlan, *l. c.* p. 296, pl. 14. fig. 8, Carinthia; *S. faciale*, MacLachlan, ibid., pl. 14. fig. 7, Switzerland.

Dasystoma mœstum, Hagen, Stett. ent. Zeit. 1868, p. 271, Old Castile; *D. rusticum*, Hag. *l. c.* p. 272, Saskatchewan; *D. nævum*, Hag. ibid., Lapland.

Oligoplectrum * *morosum*, MacLachlan, *l. c.* p. 297, Carinthia.

Setodes mœstella, MacLachlan, *l. c.* p. 298, pl. 14. figs. *sine num.*, Carinthia.

* Proposed by MacLachlan for *Dasystoma* (Ramb.), the latter name being preoccupied in Lepidoptera.

Setodes unicolor, MacLachlan, Journ. Linn. Soc. Zool. x. p. 203, Canterbury, N. Z.

Dipseudopsis nervosa, Brauer, Verh. zool.-bot. Ges. in Wien, xviii. p. 267, Philippines.

Polycentropus puerilis, MacLachlan, Journ. Linn. Soc. Zool. x. p. 204, pl. 2. fig. 8 (details), Canterbury and Auckland, N. Z.

Pycnocentria evecta, MacLachlan, *l. c.* p. 199, pl. 2. fig. 3 (anal app.), Canterbury, N. Z.; *P. aureola*, MacLachlan, *l. c.* p. 200, pl. 2. fig. 4 (anal app.), Canterbury and Auckland, N. Z.

Tetracentron amabile, MacLachlan, *l. c.* p. 201, pl. 2. fig. 5 (details), Canterbury, N. Z.

Leptocerus (?) *alienus*, MacLachlan, *l. c.* p. 202, Canterbury, N. Z.

Psilochorema confusum, MacLachlan, *l. c.* p. 210, pl. 2. fig. 10 (details), Auckland, N. Z.

ORTHOPTERA.

A. *Separate Work.*

Scudder, S. H. Catalogue of the Orthoptera of North America described previous to 1867. 8vo. Washington (Smithsonian Miscellaneous Collections, 189), October 1868, pp. xx & 89.

In this elaborate catalogue of the North-American *Orthoptera genuina*, the author has arranged the genera in alphabetical order, as also the species of each genus; but at the end of the book he gives a tabular arrangement of the families and genera for systematic purposes. The synonymy has been most industriously collected from a series of authorities the list of which occupies 16 of the introductory pages.

B. *Papers published in Journals &c.*

* *Descriptive.*

Brauer, Friedrich. Neue und wenig bekannte vom Herrn Doct. Semper gesammelte Odonaten. Verhandl. zool.-bot. Gesellsch. in Wien, Band xviii. pp. 167–188.

Notices of Dragonflies collected by Semper in the Philippines &c. The paper also includes the description of a new Myrmeleont.

——. Dritter Bericht über die von Herrn G. Semper mitgetheilten, von dessen Bruder auf den Philippinen gesammelten Neuropteren und Beschreibung einer neuen Libellulen-Gattung aus dem Museum Godeffroy in Hamburg. Ibid. pp. 541–558.

——. Verzeichniss der bis jetzt bekannten Neuropteren im Sinne Linné's. Zweiter Abschnitt. Ibid. pp. 711–742.

Contains the generic characters of the Odonata, with lists of the known species and indications of their native countries.

Brauer, Friedrich. (See "Neuroptera.")

Dietrich, K. Beiträge zur Kenntniss der im Kanton Zürich einheimischen Insecten. Mittheil. schweiz. entom. Gesellsch. vol. ii. pp. 327–332.

Contains a catalogue of the Orthoptera genuina observed by the author in the Canton of Zurich.

Eaton, A. E. An outline of a rearrangement of the genera of Ephemeridæ. Ent. Monthly Mag. vol. v. pp. 82–91.

Hagen, H. Odonaten Cubas. Stettiner entom. Zeitung, 1868, pp. 274–287. (Continuation: see 'Record,' 1867, pp. 444 & 451.)

——. The Odonat-Fauna of the island of Cuba. Proc. Bost. Soc. Nat. Hist. vol. vi. pp. 289–294.

Humbert, A. Description d'une nouvelle espèce de *Japyx* (*J. saussurii*) du Mexique. Rev. et Mag. de Zool. 1868, pp. 345–354, plate 22.

Lubbock, Sir John. Notes on the Thysanura. Part III. Trans. Linn. Soc. vol. xxvi. pp. 295–304, plates 21 and 22 (read 6th June, 1867).

Contains descriptions of 18 British species of Thysanura, four of which are described as new.

Lucas, H. Observations sur un nouveau genre d'Orthoptère sauteur (*Cosmoderus erinaceus*) de la famille des Locustiens. Ann. Soc. Ent. France, 4e série, viii. pp. 321–329, pl. 8.

Petroff, N. Etwas über die Maulwurfsgrille. Bull. Soc. Imp. Nat. Moscou, tome xl. 2. pp. 288–293: 1867.

Plessis, G. du. Libellulides des environs d'Orbe. Mittheil. schweiz. entom. Gesellsch. ii. pp. 313–321.

Rostock, M. (See "Neuroptera.")

Ruegger, E. Orthoptères de la Vallée du Léman, qui se trouvent dans la Collection de feu Alexandre Yersin. Bull. Soc. Vaud. Sci. Nat. vol. ix. pp. 648–654.

Saussure, H. de. Phasmidarum novarum species nonnullæ. Rev. et Mag. de Zool. 1868, pp. 63–70: February.

——. Orthopterorum species novæ aliquot. Rev. et Mag. de Zool. 1868, pp. 97–101 & 354–357: March and September.

Contains descriptions of new species and genera of Blattidæ.

Scudder, S. H. A century of Orthoptera. Decade I. Gryllides. Proc. Bost. Soc. Nat. Hist. vol. xii. pp. 139–143: October 21, 1868.

——. Additional remarks upon the Odonata of the Isle of

Pines and of the White Mountains of New Hampshire. Ibid. vol. xi. pp. 298–300: March 1868.

Scudder, S. H. The songs of the Grasshoppers. American Naturalist, vol. ii. pp. 113–120.

Uhler, P. R. Some remarks upon the Odonata of Hayti. Proc. Bost. Soc. Nat. Hist. vol. xi. pp. 295–298.

† *Anatomical and Physiological.*

Eaton, A. E. On some points in the Anatomy of the immature *Cœnis macrura*, Stephens. Trans. Ent. Soc. Lond. 1868, pp. 279-282.

Grenacher, H. Beiträge zur Kenntniss des Eies der Ephemeriden. Zeitschr. wiss. Zool. xviii. pp. 95–98, pl. 5.

A description of the development of the egg in the Ephemeridæ.

Meinert, F. Om dobbelte Sædgange hos Insekter, fortsatte Bidrag til Forficulernes Anatomi. Naturhistorisk Tidsskrift, 3rd series, vol. v. pp. 278–294.

A description of some peculiarities in the generative organs of the Forficulidæ, with especial reference to the occurrence of a double seminal duct in the males of several species.

Thysanura.

Japyx. A. Humbert discusses the characters of this genus and of the family *Campodeæ*, and reprints the Latin characters given of them and of Haliday's *Japyx solifugus* by Meinert (Rev. et Mag. Zool. 1868, pp. 345–348). He figures the head, thorax, and the terminal segments of the abdomen (*l. c.* pl. 22. figs. 6, 7) of specimens from Savoy and Switzerland, which he refers to *Japyx solifugus*, and of which he gives a description, with comparative remarks upon the characters cited by Haliday and Meinert (*l. c.* p. 350). The author also indicates the differences existing between the descriptions and figures of Haliday and Meinert, and seems inclined to regard those presented by the terminal forceps as of specific value. He also describes a new species, sent by Sumichrast from Mexico.

Lubbock (Linn. Trans. xxvi.) describes and figures the following known species of Thysanura:—*Smynthurus viridis* (Geoff.), p. 295, pl. 21. figs. 1–3; *S. bourletti* (Gerv.), p. 297, pl. 21. figs. 8–10; *S. pallipes* (Bourlet), p. 297, pl. 21. figs. 13-15; *Orchesella cincta* (Linn.), p. 298, incl. *Pod. vaga* (Linn.), *Orch. filicornis* (Temp.), *Ætheoscerus pulchricornis* (Bourl.), and *Orch. fastuosa* (Nicol.); *Degeeria lanuginosa* (Nicol.), p. 298, pl. 22. figs. 16–18; *Isotoma trifasciata* (Bourl.)=*bifasciata* (Bourl.), p. 299, pl. 22. figs. 20, 21; *Lepidocyrtus* (*Cyphodeirus*) *æneus* (Nicol.), p. 300; *L.* (*C.*) *gibbulus* (Nicol.),

p. 301, pl. 22. fig. 22; *L. albinos* (Nicol.), p. 301; *Podura aquatica* (De G.); *Achorutes armatus* (Nicol.), p. 301, pl. 22. fig. 23,=? *Hypogastrura fuscoviridis* (Bourl.); *A. murorum* (Bourl.), p. 302; *A. rufescens* (Linn.), p. 303; and *Lipura fimetaria* (Linn.), p. 303, pl. 32. figs. 27, 28=*Adicranus volvator* (Gerv.).

Lepisma saccharina. Lucas notices some damage caused by this insect. Bull. Soc. Ent. Fr. 1868, p. 22.

Japyx saussurii, sp. n., Humbert, *l. c.* p. 351, pl. 22. figs. 1–5 (with details), Mexico.

Smynthurus luteus, sp. n., Lubbock, *l. c.* p. 296, pl. 21. figs. 4–7, England; *S. niger*, sp. n., Lubbock, *l. c.* p. 297, pl. 21. figs. 11, 12, Kent.

Degeeria nicoletii, sp. n., Lubbock, *l. c.* p. 299, pl. 22. fig. 19, England.

Achorutes purpurescens, sp. n., Lubbock, *l. c.* p. 302, pl. 22. figs. 24–26, England.

Thysanoptera.

Walsh remarks (Pract. Entom. ii. pp. 49–51) upon the natural history of *Thrips*, which he regards as a carnivorous form. He also notices insects to which the name of "Thrips" has been given.

Boisduval (Ent. Hortic. pp. 231–235) gives a short general account of the natural history of *Thrips*.

Pseudo-Neuroptera.

Brauer, in his synopsis of the genera of this group (Verh. zool.-bot. Ges. in Wien, xviii. pp. 361 *et seq.*) divides it into the following families:—1. *Odonata*; 2. *Ephemerina*; 3. *Perlidæ*; 4. *Psocidæ*; 5. *Embidæ*; 6. *Termitina*. The first of these families is divided into the tribes *Libellulina, Cordulina, Æschnina, Gomphina, Calopterygina,* and *Agrionina,* forming the 3 subfamilies *Libellulidæ, Æschnidæ,* and *Agrionidæ*. The whole of these groups and the genera belonging to them are tabulated by Brauer on the analytical principle (*l. c.* pp. 363–393); and the genera of Odonata are subsequently characterized by him, with lists of the species and indications of their geographical range (*l. c.* pp. 711–742).

Rostock publishes (Berl. ent. Zeitschr. 1868, pp. 224–226) a catalogue of Pseudo-Neuroptera collected by him in Saxony.

Five species of this group were collected by Frauenfeld upon the Nicobars (Verh. zool.-bot. Ges. in Wien, xviii. p. 291). Of the three Libellulidæ one is the cosmopolite *Pantala flavescens* (Fab.). The other two species are Termites.

Libellulidæ.

Brauer publishes (Verh. zool.-bot. Ges. in Wien, xviii. pp. 711–742) characters of all the known genera of this group with lists of the described species and indications of their origin. This paper forms the completion of the section Odonata in his catalogue of the known Neuroptera. (See Neuroptera, p. 377.)

Hagen (Stett. ent. Zeit. 1868, pp. 274–287) continues his observations on the Dragonflies of Cuba (see 'Record,' 1867, p. 451). The species referred to are :—*L. umbrata* (Linn.), which varies greatly and includes *L. tripartita* (DeG., Burm.), *fallax* (Burm.), *subfasciata* (Burm.), *ruralis* (Burm.), *flavicans* (Ramb.), and *fusco-fasciata* (Blanch.); *Orthemis discolor* (Brauer) probably = *ferruginata* (Fab.); *Macrothemis celeno* (Selys).

Hagen also describes *M. pleurosticta* (Burm.), *tenuis* (Hag.), and *marmorata* (Hag.), all South-American species of the genus *Macrothemis*.

Hagen communicates a list of the known species of this group inhabiting Cuba and the Isle of Pines (Proc. Bost. Soc. Nat. Hist. xi. pp. 289–294). Most of the references are accompanied by short notes on the locality inhabited by and the time of appearance of the species. Sixty-five species are enumerated. Of the species described by Scudder (see 'Record,' 1866, p. 523) *Agrion maria* = *Neoneura palustris* (Hag.); *Macromia cubensis* = *Erythemis longipes* (Hag.), var. *specularis*; *Tramea insularis* = *T. abdominalis* (Ramb.); *Libellula vinosa* = *Dythemis rufinervis* (Burm.); *Mesothemis poeyi* = *Dythemis dicrota* (Hag.); *Mesothemis gundlachii* = *M. simplicicollis* (Say); *Diplax justiniana* = *D. ambusta* (Hag.); and *Perithemis domitia* = *P. metella* (Selys).

Hagen also remarks (*l. c.* p. 294) upon the species recorded by Scudder from the White Mountains of New Hampshire (see 'Record,' 1866, p. 523). *Corduligaster lateralis* (Sc.) probably = *C. sayi* (Selys); *Cordulia eremita* (Sc.) probably = *C. albicincta* (Burm.); *C. forcipata* (Sc.) = *C. arctica*; *C. shurtteffi* (Sc.) = *C. bifurcata* (Selys).

Scudder (*l. c.* p. 298–300) remarks upon some of the above determinations.

Uhler publishes (Proc. Bost. Soc. Nat. Hist. xi. pp. 295–298) some notes on the Dragonflies of Hayti.

G. du Plessis publishes (Mitth. schw. ent. Gesellsch. ii. pp. 313–321) a catalogue of the Libellulidæ found in the environs of Orbe, with brief remarks and indications of their mode of occurrence. He enumerates 12 species of *Libellula*, 4 of *Cordulia*, 4 of *Æschna*, 4 of *Gomphus*, 3 of *Calopteryx*, 5 of *Lestes*, 7 of *Agrion*, and 1 *Platycnemis*.

Pryer notices the great abundance of Dragonflies at Shanghai, where they seem to keep down the numbers of the mosquitoes. He also mentions their sometimes appearing there in immense numbers (Journ. N. China Branch Roy. Asiatic Soc. n. s. iv. pp. 75, 76).

Ghiliani describes an extensive migration of *Anax mediterraneus* (Selys) from Africa into Italy. Rev. et Mag. de Zool. 1868, p. 223.

Girard notices the occurrence at Smyrna of the African *Libellula leucosticta* (Burm.). Bull. Soc. Ent. Fr. 1868, p. cviii. The same author notices the geographical distribution of *Libellula flaveola* (Linn.). Ibid. p. cxii.

New genera :—

Onychothemis, g. n., Brauer, Verh. zool.-bot. Ges. in Wien, xviii. pp. 170, 365, & 732. Allied to *Libella* (Brauer); posterior lobe of prothorax broadly semicircular, notched; claws not toothed. Sp. *O. abnormis*, sp. n., Brauer, *l. c.* p. 170, Luzon. (Also *L. hova*, Ramb. ?)

Pachydiplax, g. n., Brauer, *l. c.* pp. 368 & 722. Allied to *Mesothemis*; prothorax bilobed; sectores arculi pedunculate; segments 2–4 of abdomen with a transverse edge; less than 10 antecubitals. Sp. *Lib. longipennis* (Burm.).

Erythrodiplax, g. n., Brauer, *l. c.* pp. 368 & 722. Allied to preceding; 10–14 antecubitals; abdominal segments 2–3 with a transverse edge. Sp. *E. fusca* (Ramb.), *contusa* (Hag.), *chloropleura* (Brau.), *anomala* (Br.), *umbrata* (Linn.), *superba* (Hag.), *distinguenda* (Ramb.), *plebeja* (Ramb.), *leontina* (Br.), and *connata* (Burm.).

Microthemis, g. n., Brauer, *l. c.* pp. 367 & 724 (=*Perithemis*, Br.). Allied to *Acisoma*; prothoracic lobe broadly 4-sided, scarcely emarginate; abdomen broad, gradually diminishing from segment 4, segments 2 & 3 with a transverse edge. Sp. *M. duivenbodei* (Br.)

Brachydiplax, g. n., Brauer, *l. c.* pp. 172, 368, & 725. Allied to preceding; discoidal cells at first in 2, then in 3 rows; abdomen short, 3-sided, thin, not notably thickened at base. Sp. *B. thoracantha* (Br.), *bispina* (Hag.), *denticauda* (Br.); *B. chalybea*, sp. n., Brauer, *l. c.* p. 173, Bohol.

Diplacina, g. n., Brauer, *l. c.* pp. 173, 368, & 733. Allied to preceding; claws with a distinct tooth; membranula small; triangle rather wide. Sp. *L. concinna*, *flava*, *brevipennis*, and *tetra* (Ramb.); *D. nana*, sp. n., Brauer, *l. c.* p. 174, Zebu, Bohol.

Trithemis, g. n., Brauer, *l. c.* pp. 176, 366, & 735. Hinder margin of prothorax 3-lobed, middle lobe small; claws toothed; middle cell with only 1 transverse vein; wings usually acute, posterior broader at base; superior sector trianguli nearly straight. Sp. *L. aurora* and *stictica* (Burm.), *soror*, *distincta*, *obsoleta*, *festiva*, *intermedia*, *marchali*, *cæsia*, *geminata*, *affinis*, and *albipunctata* (Ramb.), *rubrinervis* and *hæmatina* (Selys), *unifasciata* (Oliv.), *nigra* (V. d. Lind.), and *marnois*, *infernalis*, and *africana* (Brauer).

Brachythemis, g. n., Brauer, *l. c.* pp. 367 & 736. Allied to preceding; superior sector trianguli curved; segments 2–4 of abdomen with a transverse edge; vagina in ♀ uncovered. Sp. *L. contaminata* (Fab.).

Crocothemis, g. n., Brauer, *l. c.* pp. 367 & 736. Allied to preceding; segments 2 and 3 of abdomen with a transverse edge; ♀ with a triangular vaginal valve. Sp. *L. erythræa* (Drury), *servilia* (Drury), *sanguinolenta* (Burm.), and *inquinata* (Ramb.).

Macrodiplax, g. n., Brauer, *l. c.* pp. 366 & 737. Allied to preceding; prothoracic lobes of equal size; wings widely netted, sectores arculi shortly pedunculate, superior sector trianguli but slightly curved; vaginal valve triangular. Sp. *Diplax cora* (Kaup), *paucinervis* (Hag. MS.).

Urothemis, g. n., Brauer, *l. c.* pp. 175, 366, & 737. Allied to preceding; antennæ thick and long; sectores arculi sessile, separate at origin; vaginal valve forming a long cylindrical tube. Sp. *L. sanguinea* (Burm.), *edwardsii* (Selys), and *U. bisignata*, sp. n., Brauer, *l. c.* p. 175, Luzon.

Nannodiplax, g. n., Brauer, *l. c.* pp. 369 & 725. Allied to *Nannophya*; cardinal cell in the anterior wings very narrow, the upper sector trianguli springing from its hinder angle; prothorax broadly bilobed behind. Sp. *N. rubra* (Br.), *vacua* (Hag.).

Nannodythemis, g. n., Brauer, *l. c.* pp. 369 & 726. Allied to *Nannophya*; cardinal cell in posterior wings rendered quadrangular by the truncation of its outer angle; superior sector trianguli in fore wings springing from the outside of the quadrangle. Sp. *N. australis* (Br.).

Nannothemis, g. n., Brauer, *l. c.* pp. 369 & 726. Allied to preceding; superior sector trianguli in fore wings springing from the hinder angle of the quadrangular cardinal cell; cardinal cell in hind wings triangular. Sp. *N.*

bella (Uhl.), *maculosa* (Hag.), *semiaurea* (Mus. Ber.), *prodita* (Hag.), and *phryne* (Perty).

Tetrathemis, g. n., Brauer, *l. c.* pp. 182, 369, & 727. Allied to *Nannophya*; wings narrow, posterior not wider than anterior at base; membranula very small, almost obsolete; venation very irregular. Sp. *T. irregularis*, sp. n., Brauer, *l. c.* p. 183, Mindanao.

Lyriothemis, g. n., Brauer, *l. c.* pp. 180, 365, & 728. Allied to *Uracis*; wings broad, posterior obliquely rounded off at base; supratriangular transverse vein present; membranula of moderate size. Sp. *L. cleïs*, sp. n., Brauer, *l. c.* p. 181, Mindanao.

New species:—

Libellula villosovittata, Brauer, Verh. zool.-bot. Ges. in Wien, xviii. p. 167, Amboyna and Cape York.

Libella luzonica, Brauer, *l. c.* p. 169, East Indies.

Rhyothemis vitellina, Brauer, *l. c.* p. 184, Pelew Islands.

Amphicnemis. Brauer describes (Verh. zool.-bot. Ges. in Wien, xviii.) *A. lestoides*, p. 541, *A. glauca*, p. 542, *A. furcata*, p. 543, *A. filiformis*, p. 544, and *A. filum*, p. 545, as new species from the Philippines.

Hypocnemis. Brauer describes *H. ignea*, *l. c.* p. 547, *H. appendiculata* and *cornuta*, p. 548, *H. atropurpurea*, p. 549, and *H. erythrura*, p. 550, as new species from the Philippines.

Platysticta halterata, Brauer, *l. c.* p. 551, and *P. lestoides*, Brauer, *l. c.* p. 552, Philippines.

Agrion pilidorsum, Brauer, *l. c.* p. 553, and *A.* (*Ischnura*) *femina*, Brauer, *l. c.* p. 554, Philippines.

Ephemeridæ.

Eaton publishes (Ent. M. Mag. v. pp. 82–91) a revision of the genera of this family, in which he indicates the types selected by him for each genus and their principal characters. The genera adopted by the author are as follows:—

1. *Cœnis* (Steph.): type *C. macrura* (Steph.)
2. *Tricorythus*, g. n.: type *C. varicauda* (Pict.).
3. *Oligoneuria* (Pict.): type *O. anomala* (Pict.); types of sections *O. rhenana* (Imh.) and *O. trimeniana* (M'L.).
4. *Campsurus*, g. n.: type *Palingenia latipennis* (Walk.); of section B, *P. curta* (Hag.)=*P. albifilum*, var. (Walk.).
5. *Polymitarcys*, g. n.: type *Pal. virgo* (Ol.).
6. *Palingenia* (Westw.): type *P. longicauda* (Ol.).
7. *Pentagenia* (Walsh): type *P. vittigera* (Walsh).
8. *Hexagenia* (Walsh): type *P. limbata* (Guér.).
9. *Ephemera* (De G.): type *E. vulgata* (Linn.).
10. *Potamanthus* (Pict.): type *E. lutea* (Linn.).
11. *Leptophlebia* (Westw.): type *E. vespertina* (Linn.); of section B, *E. fusca* (Curt.).
12. *Ephemerella* (Walsh): type *E. excrucians* (Walsh)=*invaria* (Walk.).
13. *Cloëon* (Leach): type *E. diptera* (Linn.).

14. *Baëtis* (Leach): type *E. bioculata* (Linn.); of sections, *E. luteola* (Müll.) = *translucida* (Pict.) and *B. tristis* (Hag.).
15. *Bætisca* (Walsh): type *B. obesa* (Say).
16. *Coloburus*, g. n.: type *Pal. humeralis* (Walk.).
17. *Siphlonurus*, g. n.: type *B. flavida* (E. Pict.).
18. *Heptagenia* (Walsh) = *Ecdyurus* (Eat.); types of sections *H. flavescens* (Walsh) and *E. venosa* (Fab.).

These genera are considered by the author to form 4 groups or alliances as follows:—1. genera 1–$\frac{4}{2}$; 2. genera $\frac{4}{2}$–9; 3. genera 10, $\frac{11}{2}$–14; 4. genera $\frac{11}{2}$, 15–18. The genera indicated fractionally appear to enter partly into two groups. The author finally explains the terminology of the wings and their venation employed by various authors.

Eaton (Trans. Ent. Soc. Lond. 1868, pp. 279–282) describes the structure of the immature state of *Cænis macrura* (Steph.) and discusses the relationships of this species.

Oligoneuria trimeniana, sp. n., M'Lachlan, Ent. M. Mag. iv. p. 177, Natal.

Perlidæ.

Laboulbène states that *Nemura nebulosa* bears a quantity of glutinous matter at the extremity of the abdomen, and that this consists of a mass of minute eggs; also that when specimens of *Perla parisina* (Ramb.) are laid upon their back they often remain perfectly motionless, when a yellowish liquid is emitted by them between the joints of the legs. Bull. Soc. Ent. Fr. 1868, p. xxxvii.

Orthoptera genuina.

Scudder has published a very complete catalogue of the North-American Orthoptera genuina (see p. 382).

Scudder publishes (American Naturalist, ii. pp. 113–120) a paper on the stridulation of the Crickets, Locusts, and Grasshoppers. He indicates the different modes in which their sounds are produced, and figures the wing-cases of the ♂ and ♀ of *Œcanthus niveus* (*l. c.* p. 116, figs. 1, 1*a*), *Phaneroptera curvicauda* (*l. c.* p. 117, figs. 2, 2*a*), and *Arcyptera lineata* (*l. c.* p. 118, figs. 3, 3*a*), the latter accompanied by an enlarged figure of the stridulant portion of the wing-case. Scudder also indicates by musical notation (*l. c.* pp. 119, 120) the song of these and some other species.

Boisduval (Ent. Hortic. pp. 195–216) describes the general structure and habits of the insects of this group. His account of them is very scanty and imperfect.

Dietrich publishes a list of the species of this group inhabiting the canton of Zurich (Mitth. schw. ent. Gesellsch. ii. pp. 327–332). He enumerates in all 30 species, namely 3 *Forficulæ*, 2 *Blattæ*, and 1 *Periplaneta*, 1 *Gryllotalpa*, and 2 *Grylli*, one of each of the genera *Odontura*, *Phaneroptera*, *Xyphidium*, *Locusta*, and *Thamnotrizon*, 4 *Dectici*, 7 *Stenobothri*, 1 of each of the genera *Mecostethus*, *Caloptenus*, and *Œdipoda*, and 2 species of *Tettix*.

Ruegger publishes a list of Orthoptera from the valley of the Leman (Bull. Soc. Vaud. Sci. Nat. ix. pp. 648–651). He enumerates 68 species belonging to 26 genera and distributed as follows under the different families:—Forficulina 6, Blattina 3, Mantodea 1, Gryllodea 6, Locustina 14, Acridiodea 38.

Forficulidæ.

Hagen states that his *Hodotermes japonicus* is a Forficulide, and probably identical with *Brachylabis maritima*. Proc. Bost. Soc. Nat. Hist. xii. p. 139.

Forficula albipennis (Charp.) is described by Meinert as a Danish species (Naturh. Tidsskr. 3rd ser. v. pp. 276–277).

Labidura advena, sp. n., Meinert, Naturh. Tidsskr. 3rd ser. v. p. 279, Jamaica.

Blattidæ.

New genera and species :—

Hypocrita, g. n., Saussure, Rev. et Mag. de Zool. 1868, p. 99. Allied to *Epilampra*; femora spinous; claws without arolia; pronotum parabolic, scarcely exposing the head; elytra squamiform; wings 0. Sp. *H. unicolor*, sp. n., Saussure, *l. c.* p. 100, Buenos Ayres.

Paralatindia, g. n., Saussure, *l. c.* p. 100. Allied to *Latindia*; antennæ very long; pronotum pilose, fringed; ♂ elytra ciliated, pilose, coriaceous, short, with an elevated sutural line; wings rudimentary; ♀ apterous; abdomen ovate, supra-anal lamina in ♀ trigono-rotundate, in ♂ trapeziform; cerci much elongated; legs slender; arolia 0. Sp. *P. azteca*, sp. n., Saussure, *l. c.* p. 101, Mexico.

Paraceratinoptera, g. n., Saussure, *l. c.* p. 357. Allied to *Ceratinoptera*, but no arolia. Sp. *P. nahua*, sp. n., Saussure, *l. c.* p. 357, Mexico.

Anaplecta mexicana, Saussure, *l. c.* p. 97, *A. azteca*, Saussure, ibid., *A. nahua*, Saussure, *l. c.* p. 354, and *A. tolteca*, Saussure, ibid., Mexico.

Temnopteryx sumichrasti, Saussure, *l. c.* p. 97, *T. otomicus*, Saussure, *l. c.* p. 98, and *T. limbatus*, Saussure, ibid., Mexico.

Pseudophyllodromia fasciatella, Saussure, *l. c.* p. 99, Surinam.

Thyrsocera luctuosa, Saussure, *l. c.* p. 99, Surinam.

Epilampra crassa, Saussure, *l. c.* p. 99, Mexico; *E. azteca*, Saussure, *l. c.* p. 356, Mexico, Cuba.

Chorisoneura surinama, Saussure, *l. c.* p. 100, Surinam.

Hormetica surinama, Saussure, *l. c.* p. 100, Surinam.

Latindia mexicana, Saussure, *l. c.* p. 100, Mexico.

Ceratinoptera olmeca, Saussure, *l. c.* p. 354, Mexico.

Blatta (=*Phyllodromia*). Saussure describes the following new species of this genus:—*B. dilatata*, *l. c.* p. 98, *B. brunneriana*, ibid., *B. acolhua*, *l. c.* p. 99, *B. nahua*, *l. c.* p. 355, and *B. orizabæ*, ibid., from Mexico; *B. senegalensis*, *l. c.* p. 354; *B. luneli*, *l. c.* p. 355, East Indies; and *B. ceylanica*, ibid.

Ischnoptera tolteca and *I. nahua*, Saussure, *l. c.* p. 356, Mexico.

Phoraspis luctuosa, Saussure, *l. c.* p. 356, Surinam.

Zetobora maximiliani, Saussure, *l. c.* p. 357, Mexico.

Phasmidæ.

Scudder notices the reproduction of lost limbs in *Diapheromera femorata* (Proc. Bost. Soc. Nat. Hist. xii. p. 99).

New species :—

Bactridium, g. n., Saussure, Rev. et Mag. de Zool. 1868, p. 66 (= *Phybalosoma*, Westw., ex parte). ♀ apterous, filiform, cylindrical; mesonotum

5–6 times as long as pronotum; abdomen very long, vagina much produced, concealing the two filaments; antennæ short, very slender, setaceous, joint 1 very short; legs long, prismatic, strongly keeled; joint 1 of tarsi elongate. ♂ unknown. Sp. *B. couloniamum*, sp. n., Saussure, *l. c.* p. 66, Australia (Chili?).

Bacillus carinulatus, Saussure, *l. c.* p. 63, Ceylon ?

Anisomorpha claraziana, Saussure, *l. c.* p. 64, La Plata.

Pygirhynchus thomæ, Saussure, *l. c.* p. 64, St. Thomas; *P. guerini*, Saussure, ibid., Guadeloupe.

Acanthoderus rachis, Saussure, *l. c.* p. 64, New Caledonia.

Ceroys linearis, Saussure, *l. c.* p. 65, South America.

Bacteria. The following new species are described by Saussure:—*B. burkartii*, *l. c.* p. 65, Mexico; *B. antillarum*, ibid., Guadeloupe; *B. yersiniana*, ibid., Porto Rico; *B. cornuta*, ibid. (=*Acanth. cornutus*, Burm.?), St. Thomas; *B. peruana*, ibid., Peru.

Bacteria mexicana (Gray, MS.), Saussure, *l. c.* p. 357, Mexico.

Lonchodes ceylonicus, Saussure, *l. c.* p. 66, Ceylon. (Saussure also describes a species which he doubtfully identifies with *L. taprobanæ*, Westw.)

Phybalosoma cubensis, Saussure, *l. c.* p. 67, Cuba.

Anophelepis fulvescens, Saussure, *l. c.* p. 67, Nuka-Hiva; *A. poeyi*, Saussure, ibid., Cuba; *A. ceylonica*, Saussure, ibid., Ceylon.

Haplopus cubensis, Saussure, *l. c.* p. 68, Cuba.

Lopaphus spinosus, Saussure, *l. c.* p. 68, Malacca.

Creoxylus poeyi, Saussure, *l. c.* p. 68, Cuba.

Necroscia. Saussure describes the following new species of this genus:—*N. humbertiana*, *l. c.* p. 68, and *N. ceylonica*, *l. c.* p. 69, Ceylon; *N. rubescens*, *l. c.* p. 68, and *N. malaccæ*, *l. c.* p. 69, Malacca.

Phasma quitensis, Saussure, *l. c.* p. 69, Ecuador; and *P. cubensis*, Saussure, ibid.

Metriotes jurinei, Saussure, *l. c.* p. 69, origin not stated.

Gryllidæ.

Petroff (Bull. Soc. Nat. Mosc. xl. 2. pp. 288–293) describes the habits of some Mole-Crickets kept by him in confinement. One in the larval state passed the whole winter in the ground, in which it made a peculiarly formed burrow; in the spring it worked its way to the surface, but died at the end of April when moulting. The adult mole-crickets fought whenever they met, striking with their fore feet. They would strike in the same way when threatened with a stick. One of them was killed and nearly eaten up by another. The author fed his mole-crickets upon ants' eggs, flies, and the larvæ of insects, which they ate greedily, but they would not touch plants even when grown from seed for them.

Cleghorn refers to a large species of *Acheta* which destroys the young *Casuarina* trees along the Madras railway, by biting off their shoots. Trimen mentions that *Leucodendron argenteum* eats the terminal shoots of the silver tree at the Cape of Good Hope (Proc. Ent. Soc. Lond. 1868, p. xviii).

New species:—

Cycloptilum, g. n., Scudder, Proc. Bost. Soc. Nat. Hist. xii. p. 142. Allied

to *Ornebius*; head very small, produced in front; antennæ distant, long, slender, joint 1 large; prothorax nearly as long as abdomen, produced and nearly semicircular behind, almost concealing the tegmina, which have the dorsal field broad and the lateral well developed; wings rudimentary; hind femora much dilated, their tibiæ and joint 1 of tarsi with apical spines. Sp. *C. squamosum*, sp. n., Scudder, *l. c.* p. 142, Texas.

Tridactylus major, Scudder, Proc. Bost. Soc. Nat. Hist. xii. p. 139, Bengal.

Trigonidium pacificum, Scudder, *l. c.* p. 139, Hawaiian islands.

Hapithus quadratus, Scudder, *l. c.* p. 140, Cuba, Texas.

Eneoptera annulata, Scudder, *l. c.* p. 140, Central America; *E. unicolor*, Scudder, ibid., Manilla; *E. obscura*, Scudder, *l. c.* p. 141, Old Calabar.

Platydactylus bicolor, Scudder, *l. c.* p. 141, Bogotá.

Mogoplistis occidentalis, Scudder, *l. c.* p. 142, Lower California.

Nemobius circumcinctus, Scudder, *l. c.* p. 143, Mexico.

Locustidæ.

Œcanthus niveus. On the habits of this species see Walsh, Pract. Entom. ii. p. 54; see also p. 94.

Œcanthus niveus is figured in 'American Naturalist,' ii. p. 333, fig. 3.

Cosmoderus, g. n., Lucas, Ann. Soc. Ent. Fr. 4^{e} ser. viii. p. 325. Allied to *Hetrodes* and *Eugaster* (Luc.); disk of prothorax not divided by a transverse furrow; its anterior part flat, with three large spines on each lateral keel; elytra rudimentary in ♀, convex and not concealed beneath the prothorax in ♂; head with a spine between the antennæ; antennæ long; maxillary palpi long, last joint globular, inflated, larger than preceding, which is constricted near its base. Sp. *Ephippiger erinaceus* (Fairm.), *l. c.* p. 327, pl. 8 (details).

Acrydiidæ.

On the habits of the American Locusts (*Caloptenus*) see Walsh, Pract. Entom. ii. pp. 1–5.

Hagen notices (Proc. Bost. Soc. N. H. xi. p. 434) the occurrence in the stem of the cotton-plant of the eggs of a grasshopper, probably allied to the Katy-did. Scudder remarks (*l. c.* p. 435) that he had received similar twigs with the insect said to oviposit in them, which is a species of *Xyphidium*, and added that *Conocephalus ensiger* had been seen with its ovipositor forced down between the root-leaves and stalk of a species of *Andropogon*.

E. von Gernet publishes a curious letter, bearing date 1545, relating to the ravages of Locusts in Polozky and Dünaburg. Horæ Soc. Ent. Ross. v. pp. 157–160.

Scudder records his having obtained numerous specimens of a Chalcidite from a cluster of eggs of *Œdipoda carolina* (Proc. Bost. Soc. Nat. Hist. xii. p. 99).

RHYNCHOTA.

Douglas, J. W., and Scott, John. British Hemiptera: Additions and Corrections. Ent. Monthly Mag. vol. iv. pp. 238–246, and 265–271, pl. 2.

Contains descriptions of newly discovered British species of Heteroptera, with additional synonyms relating to species described in the authors' work on those insects.

——, ——. Remarks on the names applied to the British Hemiptera-Heteroptera. Ann. & Mag. Nat. Hist. 4th series, vol. i. pp. 278–282.

This paper is in reply to some remarks of Pascoe's noticed below.

——, ——. List of captures of Hemiptera in Palestine and Syria; together with descriptions of several new species. Ent. Monthly Mag. vol. v. pp. 27–33, 65–68, 114–118, and 135–139: 1868.

Fieber, F. X. Europäische neue oder wenig bekannte *Bythoscopida*. Verhandl. zool.-bot. Gesellsch. in Wien, Band xviii. pp. 449–464.

——. Die europäischen *Ælia*-Arten. Ibid. pp. 465–478, Taf. 5 & 6.

Guérin-Méneville, E. Etudes sur les Insectes considérés comme la cause de la Maladie des Cannes à sucre, dans les îles Maurice et de la Réunion. Rev. et Mag. de Zool. 1868, pp. 123–127. [Relates chiefly to the Coccidæ.]

Haglund, C. J. E. Hemiptera nova. Stettiner ent. Zeitung, 1868, pp. 150–163.

Landios, L. Anatomie der Bettwanze (*Cimex lectularius*, L.) mit Berüksichtigung verwandter Hemipterengeschlechter. Zeitschr. für wiss. Zool. xviii. pp. 206–224, pls. 11 & 12.

Pascoe, F. P. Remarks on the names applied to the British Hemiptera-Heteroptera. Ann. & Mag. Nat. Hist. 4th ser. vol. i. pp. 94–97.

In this paper Pascoe criticises the names applied to various genera of Heteroptera, and especially the diversity of practice in this respect to be met with in the works of various authors. He is inclined to adopt the plan of taking the species which stands first among those described or indicated by the founder of a genus as the type form of that genus, but also admits the rule of taking the best known, which are "generally the commonest" species as the types in breaking up an old genus. Some of the questions raised by Pascoe undoubtedly present considerable

difficulty; others may easily be settled; and some he would never have put forward had he not confined himself to the consideration of the European forms and their literature. The adoption of the Linnean name *Cimex* for the genus including *C. lectularius* (Linn.) may be defensible as a matter of convenience, and upon the ground of its having been the ancient name of the Bed-bug, but, as pointed out by Douglas and Scott, in their reply to Pascoe, *C. lectularius* can never be regarded upon scientific grounds as the type of a group characterized as is the Linnean genus *Cimex*. *Cydnus* is said by Pascoe to be discarded by Douglas and Scott, but erroneously. Those authors doubtless followed the Recorder in limiting the genus *Cydnus* to the form typified by *C. tristis* (Fab.), which is indicated by Fabricius himself as his type; and as that species was not known to occur in Britain, they could not refer to it. *Tetyra* (Fab.), being strictly synonymous with *Scutellera* (Lam.), has been dropped by many authors; its Fabrician type is *T. arcuata*; and Stål has adopted the name for this species, placing it close to *Pachycoris*. The confusion with regard to the genus *Asopus* might have been avoided had it been borne in mind that the genus was originally published by Burmeister in the 'Nova Acta,' with *Lygæus argus* (Fab.)=*mactans* (Fab.) as its sole species. As regards the common substitution of *Hydrometra* for *Gerris*, Pascoe is unquestionably right. The desirability of creating new names for genera compounded of two or more older ones, a practice to which Pascoe also objects, is very doubtful; it is strongly maintained by Douglas and Scott, against whom Pascoe's animadversions upon it are more particularly directed.

Planchon, J. V. Nouvelles observations sur le Puceron de la Vigne (*Phylloxera vastatrix* [nuper *Rhizaphis*, Planch.]). Comptes Rendus, tome lxvii. pp. 588–594.

Scott, John. (See Douglas, J. W.)

Shimer, Henry. On a new genus of Aphidæ. Trans. Amer. Ent. Soc. vol. i. pp. 283–285: October 1867.

——. Notes on the "Apple Bark-Louse," with a description of a supposed new *Acarus*. Ibid. pp. 361–374: January 1868.

Signoret, V. Essai sur les Cochenilles (Homoptères-Coccides). Annales Soc. Ent. France, 4e série, tome viii. pp. 503–528 and 829–876, pls. 9–11.

——. Essai monographique sur les Aleurodes. Ibid. pp. 369–402, pls. 9–10.

Stål, C. Hemiptera Fabriciana. Fabricianska Hemipterarter, efter de i Köpenhamn och Kiel förvarade Typexemplaren

granskade och beskrifne.—I. Kongl. Svenska Vetensk.-Akad. Handlingar, Band vii. pp. 1–148: 1868.

In this paper Stål publishes his identifications of the Fabrician Rhynchota from the types preserved in the museums at Copenhagen and Kiel. The portion published in 1868 includes the Heteroptera.

Stål, C. Bidrag till Hemipterernas Systematik. Œfvers. af Kongl. Vetensk.-Akad. Förhandl. 1867, pp. 491–560.

This paper contains synopses of the genera of Tetyrida, Asopida, Pentatomida, Acanthosomatida, Alydida, and Coreida, represented in America, of the genera of Discocephalida, Placoscelidida, Smiliida, and Darnida, and of the Asiatic and Australian genera of Pentatomida.

It is to be regretted that in this, as in other synoptical papers published by him, Stål does not in any way indicate those genera which are newly characterized; hence none but those specially engaged in the study of the Rhynchota can ascertain, without much trouble, what are to be regarded as new genera. The Recorder fears that he has failed in some instances; but life is too short to be wasted upon such investigations, which the insertion of a few asterisks or similar marks by the author might render quite unnecessary. Both in this and, especially, in the preceding paper no types are indicated for a great many of the proposed genera; in the Recorder's opinion a genus can no more exist without species, than a species without individuals, and all genera under which no species are described or cited ought to be expunged from our lists.

——. Synopsis Saldarum Sueciæ. Œfvers. af Kongl. Vetensk.-Akad. Förhand. 1868, pp. 387–393.

——. Synopsis Hydrobatidum Sueciæ. Ibid. pp. 395–398.

Walker, F. Catalogue of Homopterous Insects collected in the Indian Archipelago by Mr. A. R. Wallace, with descriptions of new species. Journ. Linn. Soc. Zool. vol. x. pp. 82–193, pl. 3: August 7 and September 25, 1868.

General Notes.

Douglas and Scott publish (Ent. M. Mag. v.) a list of species of this order taken in Palestine and Syria by Cambridge. The list includes 46 species of Heteroptera and 2 of Homoptera. Of the former 14 are described as new, and 3 of these as the types of new genera.

Boisduval (Ent. Hortic. pp. 217–338) describes the general characters of this group, and the habits of those forms which commonly occur in gardens. He treats in considerable detail of the Aphididæ and Coccidæ. He includes *Thrips* in this order (*l. c.* pp. 231–235).

Frauenfeld (Verh. zool.-bot. Ges. in Wien, xviii. p. 293) gives a list of 10 species of Heteroptera collected by him on the Nicobar Islands.

Heteroptera.

Scutata.

Scutellerides.

Stål (Œfvers. Vet.-Akad. Förh. 1867, pp. 491–495) publishes a tabular conspectus of the American genera of his subfamily Tetyrida (=Scutellerida, Ins. Afr.). He refers *Pachycoris hirtipes* (H.-Sch.) and *P. atomarius* (Germ.) to his genus *Ascanius*, *P. hebraicus* (Pal.-B.) to his genus *Polytes*, *Tetyra arcuata* (Fab.) and *Pachyc. pinguis* and *farctus* (Germ.) to *Tetyra*, *P. variabilis* (H.-Sch.), *scurrilis* (Stål), and *leucopterus* (Germ.) to his genus *Orsilochus*, *P. variegatus* (H.-Sch.) to *Diolcus* (Mayr), *P. variabilis* (Spin.) and *Symphylus spinolæ* (Sign.) to his genus *Misippus*, *P. rubrocinctus* and *flavocinctus* (H.-Sch.) to his genus *Tiridates*, and *Symphylus punctellus* (Stål) to *Sphyrocoris* (Mayr).

Stål (Kongl. Svenska Vet.-Akad. Handl. vii. pp. 9–15) identifies the following Fabrician species from the types:—*Tetyra dispar*=*Cantao ocellatus* (Thunb.); *T. senator*=*Scutellera metallica* (Montr.), and belongs to *Philia* (Schiödte), the species of which are tabulated by Stål (*l. c.* p. 10); *T. billardierii* and *T. regalis* belong to *Calliphara*; *C. stockerus* (Fab.)=*purpurea* (Westw.); *T. patricius*=*bengalensis* (Westw.)=*basilica* (Germ.) and *T. eques*, incl. *Call. schwaneri* (Voll.), all referred to *Chrysocoris* (Hahn), the species of which are tabulated by Stål (*l. c.* p. 11); *T. comes* belongs to *Cryptacrus* (Mayr); *T. sehestedii* to *Solenosthedium*; *T. maura*, *hottentotta*, and *nigra* belong to *Eurygaster*; *T. picta* is a var. of the first, *maroccanus* of the second, and the third=*Euryg. hottentottus* (Fieb.); *T. arcuata* is the type of *Tetyra*; *T. schousbœi* is a *Pachycoris*; *T. wolffii* is an *Achates* (Stål); *T. irrorata* is referred to *Diolcus* (Mayr), and *T. affinis* to *Symphylus* (Dall.); *T. sexpunctata* is referred to *Angocoris*, and *T. illustris* is a variety of it. *T. lundii* belongs to *Cyptocoris*, *T. desfontainii* to *Trigonosoma*.

Achates, g. n., Stål, Œfvers. Vet.-Akad. Förh. 1867, p. 492. Type *Pachycoris lævilineatus* (Stål).

Ephynes, g. n., Stål, *l. c.* p. 495. Type *Pach. knochii* (Germ.).

Leprosoma ståli, Douglas and Scott, Ent. M. Mag. v. p. 29, Palestine.

Demoleus oblongus, Haglund, Stett. ent. Zeit. 1868, p. 150, Amazons.

Amauropepla denticulata, Haglund, *l. c.* p. 151, Rangoon.

Melanophara dentata, Haglund, *l. c.* p. 152, Rangoon.

Podopides.

Stål (Œfvers. Vet.-Akad. Förh. 1867, p. 502) refers *Podops fibulata* (Germ.), *vermiculata* and *tarsata* (Voll.), and *cinctipes* (Say) to his genus *Scotinophara*. The genera belonging to this group represented in Asia and Australia are tabulated by Stål (*l. c.* pp. 502–503).

Tetyra bispinosa and *Cimex coarctatus* (Fab.) belong to *Scotinophara*, according to Stål, Kongl. Svenska Vet.-Akad. Handl. vii. pp. 20, 21.

Scotinophara inermis, Haglund, *l. c.* p. 152, Celebes; *S. affinis*, Hagl. *l. c.* p. 153, Rangoon.

Odontoscelides.

Tetyra smidtii, *daldorfii*, and *tibialis* (Fab.) are referred to *Thyreocoris*

(Schr.)= *Corimelæna* (White), and *T. impressa* (Fab.) to *Chlænocoris*, by Stål, Kongl. Svenska Vet.-Akad. Handl. vii. pp. 8–9.—*T. dorsalis* (Fab.)= *Odontoscelis signatus* (Fieb.), Stål, *l. c.* p. 15.

Plataspides.

Stål (Kongl. Svenska Vet.-Akad. Handl. vii. pp. 5–6) notices the Fabrician species belonging to this group, namely, *Brachyplatys flavipes* and *silphoides* and *Coptosoma cribrarium*.

Asopides.

Stål (Œfvers. Vet.-Akad. Förh. 1867, pp. 495–499) publishes a synopsis of the European and American genera of this group. He combines *Stiretrosoma* (Spin.) with *Stiretrus*, refers *Pentatoma exapta* (Say) to his genus *Perillus*, retains the Linnean generic name *Cimex* for a group of species including *Canthecona* and *Picromerus* (Am. & Serv.), *Audinetia* (Ell.), and *Pinthæus* (Stål)=*Platynopus* (Fieb.), refers *Telepta cincticeps* and *pulchricornis* (Stål) to *Tynacantha* (Dall.), and states that *T. marginata* (Dall.)= *Podisus albiseptus* (H.-Sch.), refers *Telepta* and *Troilus* (Stål) and *Apatcticus* (Dall.) to *Podisus* (H.-Sch.), of which he characterizes four subgenera and indicates their species; *Apatcticus halys* (Dall.) = *Podisus punctipennis* (H.-Sch.).

Stål (Kongl. Svenska Vet.-Akad. Handl. vii. pp. 15–17) identifies the following Fabrician species:—*Cimex tripustulatus* and *tibialis* belong to *Oplomus*; *C. spinidens* and *nigridens* are referred to *Cimex* (s. str.)=*Picromerus*; *C. splendidulus* and *calens* belong to *Platynopus*, the latter = *P. rostratus* (Drury); *C. elector* (Fab.)=*Podisus luridus* (Fab.).

Colpothyreus, g. n., Stål, Œfvers. Vet.-Akad. Förh. 1867, p. 495. Type *Halys flavolincatus* (Blanch.).

Mineus, g. n., Stål, *l. c.* p. 498. Type *Podisus strigipes* (H.-Sch.).

Comperocoris, g. n., Stål, *l. c.* p. 499. Type *Asopus cruciatus* (Sign.).

Cydnides.

Stål (Kongl. Svenska Vet.-Akad. Handl. vii. pp. 6–8) identifies the following Fabrician species:—*Cydnus aterrimus* (Forst.), incl. *sanguinicollis* and *brunnipennis* (Fab.); *C. varians* is an *Æthus*; *C. brunneus* is a *Macroscytus*; *C. æthiops* belongs to *Pangæus* (Stål); *C. scarabæoides*=*Cephalocteus histeroides* (Fieb.); and *C. brevipennis* belongs to *Legnotus* (Schiödte).

Æthus lævis, sp. n., Douglas & Scott, Ent. M. Mag. iv. p. 238, Cornwall.

Sciocorides.

Stål (Œfvers. Vet.-Akad. Förh. 1867, pp. 499–501) publishes a conspectus of the genera which he refers to his subfamily *Discocephalida*, in which he includes several genera, such as *Cataulax* and *Sympiezorhynchus* (Spin.), *Coriplatus* (White), *Antiteuchus* and *Mecistorhinus* (Dall.), and *Dinocoris* (Burm.), which seem hardly to belong to this group.

Sciocoris varicornis (Dall.) is referred to *Laprius* (Stål), *l. c.* p. 505, where the genera of Sciocorides are tabulated.

Stål (Kongl. Svenska Vet.-Akad. Handl. vii. p. 17) tabulates the species of the genus *Discocephala*, and states that his *D. conspersipes*= *C. umbraculatus*

(Fab.). *Halys plana* (Fab.) belongs to *Dymantis* (Stål) and *Naucoris cursitans* (Fab.) to *Sciocoris* = *S. terreus* (Fieb.), according to Stål (*l. c.* p. 21).

Menestheus, g. n., Stål, Œfvers. Vet.-Akad. Förh. 1867, p. 504. Type *Scioc. nercivus* (Dall.).

Eribotes, g. n., Stål, *l. c.* p. 504. Type *Scioc. australis* (Dall.).

Sciocoris cambridgeii, sp. n., Douglas & Scott, Ent. M. Mag. v. p. 30, plains of Jordan.

Ædnus similis, sp. n., Haglund, Stett. ent. Zeit. 1868, p. 154, Rangoon; *Æ. notatus*, sp. n., Hagl. ibid., Manilla; *Æ. rugosus*, sp. n., Hagl. ibid., Java.

Halydides.

Stål (Œfvers. Vet.-Akad. Forh. 1867, pp. 506–510) tabulates the Australian and Asiatic genera of this group, and refers *Platycoris umbrosus* to his genus *Niarius*, and *Pœcilotoma spinosa* to *Omyta* (Spin.).

Stål also (*l. c.* pp. 523–525) tabulates the American genera of this group, and states that *Schœfferella litigiosa* (Spin.) = *Ochlerus incisus* (H.-Sch.).

Stål (Kongl. Svenska Vet.-Akad. Handl. vii. pp. 18–20) refers *Edessa sepulcralis, guttato-punctata, triptera*, and *mixta* (Fab.) to *Antiteuchus*; with the first of these species *A. luctuosus* (Stål) is identical, with the second *A. griseus* (Dall.), and with the third *Cataulax apicalis* (Erichs.). *Halys variolosa* (Fab.) is distinct from Linné's species, which = *E. carinosus* (Erichs.), and identical with *Din. maculatus* (Lap.).

Stål also (*l. c.* pp. 22–23) identifies the following Fabrician species:— *Ælia hastata* = *Diploxys*; *Æ. lanceolata* = *Dichelocephala*; *Halys serrata* = *Atelocera*; *H. oculata* and *clavata* = *Dalpada*; *Edessa guttata* = *Erthesina*; *Cimex reticularis* belongs to *Macropygium* and = *Oxyrhinus subsulcatus* (Am. & Serv.); *C. marginatus* is an *Ochlerus* and = *O. cinctus* (Spin.), *C. flavicinctus* (H.-Sch.), and *Menipha brunnea* (Am. & Serv.); *H. depressa* is a *Chlorocoris*; and *C. cœlebs* belongs to *Oncocoris* (Mayr).

A species of *Halys* is said by W. J. M'Laughlin to destroy the "potato-bug" in the United States. Amer. Natural. ii. p. 330.

Theseus, g. n., Stål, Œfvers. Vet.-Akad. Förh. 1867, p. 508. Type *Pœcilometis modestus* (Stål).

Polycarmes, g. n., Stål, *l. c.* p. 509. Type *Acanthidium punctatissimum* (Montr.).

Moncus, g. n., Stål, *l. c.* p. 524. Type *Ochlerus obscurus* (Dall.).

Melanodermus, g. n., Stål, *l. c.* p. 524. Sp. *Ochlerus circummaculatus* and *tartareus* (Stål).

Lincus, g. n., Stål, *l. c.* p. 524. Type *Ochlerus rufospilotus* (Westw.).

Chloropepla, g. n., Stål, *l. c.* p. 525. Type *Loxa vigens* (Stål).

Antiteuchus pallescens, sp. n., Stål, Kongl. Svenska Vet.-Akad. Handl. vii. p. 18, note, South America.

Pelidnocoris stålii, sp. n., Haglund, Stett. ent. Zeit. 1868, p. 150, Mexico.

Tibraca fusca, sp. n., Haglund, *l. c.* p. 151, Brazil?

Gilippus hostilis, sp.n., Haglund, *l. c.* p. 153, Melbourne.

Pentatomides.

Stål (Œfvers. Vet.-Akad. Förh. 1867, pp. 510–522) tabulates the Asiatic and Australian genera of this group. He refers to *Stollia* (Ellenr.) *Cimex*

guttigerus (Thunb.) and *Eysarcoris distactus* and *humeralis* (Dall.), and *Tropicoris decempunctatus* (Motsch.) to *Prionochilus* (Dall.).

Stål also (*l. c.* pp. 525–534) tabulates the American genera, and has the following remarks:—*Cœnus tarsalis* (Dall.) = *Hymenarcys æruginosa* (Am. & Serv.) = *Pentatoma delia* (Say); *Galedanta myops* = *Brochymena unicolor* (H.-Sch.); *Pentatoma albocostata, dimidiatocollis,* and *hæmatopus* (Spin.), and *bonariensis, fraterna* (= *Acledra reflexa,* Sign.), *kinbergi* and *modesta* (Stål), belong to *Acledra* (Sign.); *Myota* (Spin.) = *Ægius* (Dall.).

Stål (Kongl. Svenska Vet.-Akad. Handl. vii. pp. 24–35 & 39) identifies numerous Fabrician species belonging to this group, as follows:—*Edessa picus* belongs to *Halyomorpha* (Mayr), incl. *marmoreus,* (Fab.) and *cinnamomeus* (Wolff) and = *Halyom. timorensis* (Mayr); *C. pugillator* = *Halys jaculus* (Fab.) and *C. azureus* belong to *Caura* (Stål); *C. binotatus* belongs to *Carbula* (Stål); *C. debellator* and *Coreus hastator* belong to *Aspaira,* Stål, the first = *Pent.* (*Asp.*) *armigera* (Stål), and the second includes *C. gladiator* and *jaculator* (Fab.); *C. victor* is a *Proxys*; *C. delirator* = *hastator* (Fab.) is a *Berecynthus*; *C. myops* is a *Galedanta*; *C. heros* and *crenator* belong to *Euschistus,* and the former = *E. apicalis* (Dall.); *C. geographicus* and *ypsilon* belong to *Mormidea*; *C. typhoeus* is an *Œbalus* (Stål), and = *Pent. augur* (Say); *C. inscriptus* = *C. ypsilongriseus* (DeG.), is also an *Œbalus*; *C. carnifex* is a *Cosmopepla* (Stål); *C. prasina,* with which *C. dissimilis* is identical, belongs to *Palomena* (Muls.) and = *C. viridissima* (Poda); *C. strictus* belongs to *Peribalus* (Muls.); *C. albipes* is a *Dryocoris* (Muls.) and = *Holcostethus congener* (Fieb.); *C. varius,* with which *C. hunula* is identical, is referred to *Carpocoris* (Kol.); *C. perditor* and *maculatus* belong to *Thyanta* (Stål); *C. versicolor* = *Agonoscelis v.*; *C. albomarginellus* is a *Eurydema*; *C. senegallensis* is a *Stenozygum* (Fieb.) and = *S. gloriosum* (Stål); *C. limbatus* is a *Cinxia* (Stål); *C. discoideus* is a *Runibia* (Stål) and = *Arocera circumcincta* (Sign.); *C. violaceus* is a *Vulsirea*; *C. gramineus,* with which *C. seladonius* is identical, belongs to *Acrosternum* (Fieb.); *C. lituratus* and *rubro-fasciatus* belong to *Piezodorus* (Fieb.), the former = *P. degeeri* (Fieb.), the latter incl. *C. flavescens* (Fab.) and *Rhaphig. virescens* (Am. & Serv.); *C. iratus* belongs to *Banasa* (Stål); *C. fimbriatus* belongs to *Plautia* (Stål), and includes *Pent. fimbriolatum* and *fimbriatum* (H.-Sch.); *Edessa guineensis* and *C. beryllus* belong to *Zangis* (Stål); *C. adspersus* and *histrio* belong to *Antestia* (Stål), and the latter = *Rhaphigaster concinnus* (Dall.); *Edessa dama* is a *Placosternum*; *E. hamata* is a *Rhynchocoris,* and = *humeralis* (Thunb.); *C. tristriatus* is a *Cyphostethus,* and = *C. lituratus* (Fieb.); *C. collaris* = *dentatus* (De G.); *C. ferrugatus* (*ferrugator*) is an *Elasmucha* (Stål), as also *C. fasciator* and *C. agathinus,* the latter = *griseus* (Linn.).

Ælia. Fieber (Verh. zool.-bot. Ges. in Wien, xviii. pp. 465–478) publishes a detailed analytical description of the European species of this genus illustrated with figures. He characterizes the following known species:—*Æ. acuminata* (Linn.), p. 467, pl. 5. fig. 1; *Æ. burmeisteri* (Küst.), p. 467, pl. 5. fig. 2; *Æ. klugi* (Hahn), p. 468, pl. 5. fig. 3; *Æ. germari* (Küst.), p. 469, pl. 5. fig. 4; *Æ. rostrata* (Boh.), p. 474, pl. 6. fig. 9; and *Æ. virgata* (Klug), p. 477, pl. 6. fig. 12. The remaining six species are described as new.

Strachia histrionica (Hahn). On the habits of this species, see Pract. Entom. i. p. 110.

New genera :—

Astyanax, g. n., Stål, Œfvers. Vet.-Akad. Förh. 1867, p. 511. Type *Scutellera trimaculata* (Lap. & Serv.).

Amphimachus, g. n., Stål, *l. c.* p. 512. Type *Ædnus circumflexus* (Stål).

Sabæus, g. n., Stål, *l. c.* p. 513. Type *Rhaphigaster spinosus* (Dall.).

Zangis, g. n., Stål, *l. c.* p. 514. Sp. *Rhaphigaster amyoti* (Dall.), *R. dorsalis* (Dohrn), and perhaps *Pentatoma crassa* (Westw.).

Tolumnia, g. n., Stål, *l. c.* p. 515. Sp. *Pentatoma latipes* (Dall.) and *trinotata* (Westw.).

Hyparete, g. n., Stål, *l. c.* p. 516. Type *Pent. boitardi* (Montr.).

Eurinome, g. n., Stål, *l. c.* p. 516. Type *Pent. inconspicua* (Montr.) = *basiventris* (Sign.).

Niphe, g. n., Stål, *l. c.* p. 516. Sp. *Pent. cephalus* and *elongata* (Dall.)

Lubentius, g. n., Stål, *l. c.* p. 517. Type *Pent. marginella* (Westw.).

Jurtina, g. n., Stål, *l. c.* p. 518. Type *Pent. longirostre* (Montr.).

Compastes, g. n., Stål, *l. c.* p. 519. Type *Cimex boutanicus* (Dall.).

Amyntor, g. n., Stål, *l. c.* p. 519. Type *Halys obscura* (Dall.).

Ocirrhoë, g. n., Stål, *l. c.* p. 521. Type *Cuspicona inconspicua* (Dall.).

Peribœa, g. n., Stål, *l. c.* p. 521. Type *Cusp. pulchella* (Dall.).

Cosmopepla, g. n., Stål, *l. c.* p. 528. Sp. *Cimex carnifex* (Fab.) and *Eysarcoris decoratus* (Hahn).

Menecles, g. n., Stål, *l. c.* p. 527. Type *Pentatoma inserta* (Say).

Trichopepla, g. n., Stål, *l. c.* p. 528. Type *Pent. pilipes* (Dall.).

Œnopia, g. n., Stål, *l. c.* p. 529. Sp. *Pent. unidentata* (Spin.) and *punctoria* (Stål).

Pharnus, g. n., Stål, *l. c.* p. 530. Type *Mecistorhinus variegatus* (Guér.).

Phorbanta, g. n., Stål, *l. c.* p. 533. Type *Lanopis variabilis* (Sign.).

Hyperbius, g. n., Stål, *l. c.* p. 534. Type *Ditomotarsus geniculatus* (Sign.).

New species :—

Ælia. Fieber (*l. c.*) describes the following as new European species of this genus:—*Æ. melanota*, p. 470, pl. 5. fig. 5, Caucasus; *Æ. cognata*, p. 471, pl. 5. fig, 6, S. of France; *Æ. obtusa*, p. 462, pl. 6. fig. 7, Transcaucasus; *Æ. furcula*, p. 473, pl. 6. fig. 8, Sarepta; *Æ. cribrosa*, p. 475, pl. 6. fig. 10, Spain; and *Æ. albovittata*, p. 476, pl. 6. fig. 11, Brussa.

Stollia quadrimaculata, Haglund, Stett. ent. Zeit. 1868, p. 154, Celebes.

Mormidea speciosa, Haglund, *l. c.* p. 155, Amazons.

Œbalus rufescens, Haglund, *l. c.* p. 155, Amazons.

Cosmoprepes bilunulatus, Haglund, *l. c.* p. 155, Waigiou; *C. biguttatus*, Hagl. *l. c.* p. 156, Aru.

Ptilarmus fasciatus, Haglund, *l. c.* p. 156, Mexico.

Arocera crucigera, Haglund, *l. c.* p. 157, Amazons.

Cresphontes nigro-maculatus, Haglund, *l. c.* p. 157, Deccan.

Pugione flavescens, Haglund, *l. c.* p. 158, Waigiou.

Morna cornuta, Haglund, *l. c.* p. 158, Moreton Bay.

Pegala biguttula, Haglund, *l. c.* p. 159, Fiji Islands.

Hyllus æruginosus, Haglund, *l. c.* p. 160, Siam.

Priassus spiniger, Haglund, *l. c.* p. 160, Java.

Hellica nitica, Haglund, *l. c.* p. 161, Amazons.

Edessides.

Stål (Kongl. Svenska Vet.-Akad. Handl. vii. pp. 35–38 & 40) identifies the following Fabrician species belonging to this group:—*Edessa vitulus, nigridens, sexdens, quadridens, macula, fulvicornis,* and *meditabunda* belong to *Edessa* (s. str.); *E. brunnipes* incl. vars. of *sexdens* and *quadridens*; *E. dentata* (Dall.)=*sexdens*; *Cimex glaucescens* (Fab.)=*meditabunda*; *E. geniculata* is a *Brachystethus*; *E. obscura* is an *Aspongopus*; and *E. brevicornis* a *Megymenum*; *C. calidus* is a *Piezosternum*; *E. gazella* and *vacca*=*Piezosternum subulatum* (Thunb.); *E. amethystina*=*rubens* (Fab.), and the latter name has the priority.

Peromatus robustus, sp. n., Haglund, Stett. ent. Zeit. 1868, p. 161, Vera Cruz.

Phyllocephalides.

Stål (Kongl. Svenska Vet.-Akad. Handl. vii. pp. 40 & 41) states that *Cimex rugosa* (Fab.) and *Edessa modesta* (Fab.) belong to *Phyllocephala*, the former to the subgenus *Basicryptus*, the latter to *Dalsira*; *Ælia furcata* (Fab.)=*histeroides* (Fab.); and *Æ. rostrata* (Fab.) is a *Megarhynchus*=*M. hastatus* (Dall.).

Supericornia.

Stål (Œfvers. Vet.-Akad. Förh. 1867, pp. 534–551) tabulates the American genera of this group, which he divides into the following six subfamilies:—*Meropachydida, Mictidida, Placoscelidida, Alydida, Coreida,* and *Pseudophlœida.*

Spartocerides.

Stål (Kongl. Svenska Vet.-Akad. Handl. vii. pp. 54–55) notices the following Fabrician species:—*Coreus mœstus*=*C. fuscus* (Thunb.), and belongs with *C. batatas* and *gigas*, to *Spartocera*; *C. serrator* is the type of *Eubule* (Stål).

Eubule, g. n., Stål, Œfvers. Vet.-Akad. Förh. 1867, p. 545. Sp. *Spart. sculpta* (Perty), *scutellata* (Westw.)=*Crinocerus subtomentosus* (Stål) and *farinosa* (Dall.).

Mictides.

According to Stål (Œfvers. Vet.-Akad. Förh. 1867, pp. 538–542) *Rhombogaster* (Dall.)=*Mozena* (Am. & Serv.), *Piezogaster* (Am. & Serv.)=*Archimerus* (Burm.), *Phyllœleocnemis* (Costa)=*Plaxiscelis* (Spin.), changed to *Placoscelis* by Stål, and *Fulicopus* (Costa)=*Melynthus* (Stål).

Stål (Kongl. Svenska Vet.-Akad. Handl. vii. pp. 41–50) identifies the following Fabrician species of this group:—*Lygœus crassipes* is an *Hirilcus* (Stål), the species of which are tabulated (pp. 42–43), and the genera allied to *Meropachys* (p. 42, note); *L. oblongipes* is a *Mygdonia* and = *M. lævis* (Stål); *L. tristator* and *grossipes* (S. R. p. 205. 11) belong to *Mictis* (s. str.) and *tumidipes* (Fab., H.-Sch.) is identical with the latter: *L. pictor, heros,* and *fulvicornis* belong to *Mictis*; *L. calcar* and *grossipes* (S. R. p. 203. 3) belong to *Physomerus*; *Coreus scabrator* and *Lyg. clavipes* belong to *Acanthocoris*; *L. gladiator, lineatella,* and *dilatatus* belong to *Melucha*; *Cor. calcarator* is an *Archimerus* and = *Cor. alternatus* (Say) and *Piezogaster albono-*

tatus (Am. & Serv.); *L. flavicornis* is the type of a new genus, *Grammopœcilus*, the characters of which and its allies are tabulated (p. 48, note); *C. clavipes* is a *Camptischium* and = *Crin. fulvicornis* (H.-Sch.); *C. galeata* is a *Euthochtha*; *C. dentipes* and *armator* belong to *Zoreva*, and the former = *Z. fasciata* (Am. & Serv.); *Lyg. compressipes* = *latipes* (Drury), and belongs to *Metapodius*; *L. elatus* = *Petalops thoracicus* (Thunb.).

Grammopœcilus, g. n., Stål, Kongl. Svenska Vet.-Akad. Handl. vii. p. 48, Allied to *Nematopus*; head and eyes equal in breadth to anterior margin of the thorax, scarcely callous behind eyes, filled up between antennæ, tylum and juga deflexed, bucculæ united behind; rostrum slightly passing anterior coxæ, joints 1 & 2 subequal; thorax somewhat declivous in front, with a collar, posterior angles produced; scutellum a little longer than broad; veins of membrane simple; prosternum impressed; abdomen a little wider than hemelytra, spiracula nearly twice as far from the apex as from the base of the segments; legs moderate, posterior a little less distant from each other than from the sides of the breast; femora spinous beneath, posterior thickened; posterior tibiæ simple, straight, unarmed. Type *Lygæus flavicornis* (Fab.).

Peranthus, g. n., Stål, Œfvers. Vet.-Akad. Förh. 1867, p. 536. Type *Meropachys longicornis* (Dall.).

Elathea, g. n., Stål, *l. c.* p. 541. Sp. *Crinocerus mundulus* (Stål).

Thymetus, g. n., Stål, *l. c.* p. 541. Sp. *Metapodius ochropterus* (Stål).

Anisoscelides.

Stål (Kongl. Svenska Vet.-Akad. Handl., vii. pp. 50–53) identifies the following Fabrician species:—*Alydus histrio* belongs to *Copium*, and includes *C. scurra* (Burm.); the species of this genus are tabulated (pp. 50–51); *Lyg. foliaceus* belongs to *Anisoscelis*; *L. bilineatus* to *Diactor*; *L. gonagra*, *australis*, *auctus*, *balteatus* (= *Anis. fasciatus*, H.-Sch.), and *phyllopus* belong to *Leptoglossus* (Guér.), the last is *Anisosc. albicinctus* (Say) = *confusa* (Dall.); *Cor. elongator* is a *Leptoscelis*, and = *infumata* (Dall.), the species are tabulated (p. 53); *L. dispar* = *picta* (Drury), and belongs to *Phthia* (Stål), of which the species are tabulated (p. 53); *Syrtis serrata* (= *Cor. gravidator*) belongs to *Harmostes* (*l. c.* p. 67), and = *H. perpunctatus* (Dall.); *Lyg. sanguinolentus* (= *cruentus*), *rufomarginatus*, *abdominalis*, and *augur* (= *chalcocephalus*) belong to *Serinetha* and the first = *coturnix* (Burm.).

Petalotoma (Guér.) = *Chondrocera* (Lap.) according to Stål (Œfvers. Vet.-Akad. Förh. 1867, p. 545).

Alydides.

According to Stål (Œfvers. Vet.-Akad. Förh. 1867, pp. 542–543) *Tivarbus* (Stål) = *Hyalymenus* (Am. & Serv.), and *Burtinus* (Stål) and *Megalotomus* (Fieb.) = *Alydus*.

Alydus tarsatus (+ *atratus*) and *sinuatus* (Fab.) belong to *Tivarbus* (Stål), which is a subgenus of *Hyalymenus*; *A. pedestris*, *fuscus*, *linearis* (= *dentipes*, H.-Sch.), and *dentipes* (Fab.) belong to *Riptortus*; *A. arcuatus* (Fab.) belongs to *Tupalus* (Stål); and *A. tibialis* (Fab.) = *calcaratus* (Linn.). Stål, Kongl. Svenska Vet.-Akad. Handl. vii. pp. 62–65.

Protenor belfragei, sp. n., Haglund, *l. c.* p. 162, Illinois.

Stenocephalides.

Stål (Kongl. Svenska Vet.-Akad. Handl. vii. pp. 66–67) retains the Fabrician genus *Gerris* for the following Fabrician species:—*G. filiformis*, *G. angustatus* (=*oratorius*, Fab., = *Myodochus trinotatas*, H.-Sch., = *Leptocorisa maculiventris*, Dall.), and *G. varicornis* (=*apicalis* Stål).

Coristenia (Costa) = *Lyrnessus* (Stål), according to Stål, Œfvers. Vet.-Akad. Förh. 1867, p. 543.

Coreides.

Stål (Kongl. Svenska Vet.-Akad. Handl. vii. pp. 55–62) identifies the following Fabrician species:—*Coreus delirator* (= *nigropunctatus*, De G.) and *rubricator* belong to *Zicca*; *Lyg. venosus* and *linea* belong to *Hypselonotus*, and the former = *H. dimidiatus* (Hahn); *C. bellator*, *scorbuticus*, and *rugator* (=*tristis*, De G.) belong to *Anasa*, and the second = *Acanthocerus nebulosus* (Pal.-B.) and *Anasa spiniceps* (Stal); the species of *Anasa* are tabulated (p. 57), and it is made to include *Oriterus* (Hahn), *Acanthocerus* (Pal.-B.), and *Lagaria* (Dall.); *L. guttula* belongs to *Catorhintha* (Stål) and = *Gonocerus dorsiger* (Westw.); *L. abbreviatus* and *graminis* belong to *Homœocerus*; *Cor. pugnator* belongs to *Cletus* (Stål), as also *C. calumniator* and *lanciger*; *C. hastatus* and *elevator* belong to *Cletomorpha* (Mayr); *Alydus acicularis* belongs to *Plinachtus* (Stål) and = *Leptoscelis ventralis* (Dall.); *L. acantharis* belongs to *Clavigralla*.

Encedonia, g. n., Stål, Œfvers. Vet.-Akad. Förh. 1867, p. 549. Type *Pseudophlœus muticus* (Sign.).

Arioge, g. n., Stål, *l. c.* p. 550. Type *Eldarca germainii* (Sign.).

Xiphares, g. n., Stål, *l. c.* p. 551. Type *Gonocerus tabulatus* (Burm.).

Niroveeus, g. n., Stål, Kongl. Svenska Vet.-Akad. Handl. vii. p. 59, note. Allied to *Catorhintha* (Stål); head longer and more porrect; last joint of antennæ much thickened, fusiform; posterior femora somewhat thickened, spinulous beneath. No type indicated.

Anasa uhleri, sp. n., Stål, Kongl. Vet.-Akad. Handl. vii. p. 57; *A. nigripes*, sp. n., Stål, ibid., Mexico.

Rhopalides.

Stål (Kongl. Svenska Vet.-Akad. Handl. vii. pp. 68, 69) refers *Lygæus lineola* (=*Rhop. errans*, Fieb.), *Coreus hyalinus* (= *R. truncatus*, Fieb.), *C. crassicornis* (= *C. abutilon*, Rossi), and *C. sidæ* (Fab.) to the genus *Corizus*. *C. obscurator* belongs to *Margus* and = *M. impudens* (Stål); the species of this genus are tabulated (p. 58).

Margus pallescens, sp. n., Stål, Kongl. Vet.-Akad. Handl. vii. p. 58, Buenos Ayres?

Lygæodea.

Stål (Kongl. Svenska Vet.-Akad. Handl. vii. pp. 69–79 & 90) identifies numerous Fabrician species as follows:—*Coreus gibbus* and *Lygæus oblongus* belong to *Blissus*, the latter to the subgenus *Ischnodemus*; the genus *Lygæus* (s. str.), the subgenera of which are tabulated (pp. 75–76), includes (subg. *Oncopeltus*) *L. varicolor*, *aulicus*, (subg. *Lygæus*) *Cor. striatus*, *L. pulcher* (=*variegatus*, De G.), *pulchellus*, *collaris*, (subg. *Stalagmostethus*) *L. furcatus*, (subg. *Spilostethus*) *L. trilineatus*, *familiaris* (=*hospes*), (subg. *Graptolomus*)

L. turcicus, (subg. *Pyrrhobaphus*) *L. leucurus*, (subg. *Graptostethus*) *L. servus*, *mendicus*, and *argentatus*; *Coreus clavicornis* belongs to *Nysius*, subg. *Rhypodes* (Stål), and is regarded as synonymous with *N. zealandicus* (Dall.); *L. tricolor* belongs to *Geocoris*; *Tingis virescens* is a *Cymodema*; *L. serripes* and *Coreus pictus* belong to *Plociomera*; *L. chiragra* belongs to *Rhyparochromus* (s. str.); *L. maroccanus*=*rolandii* (Linn.), which is referred, with *L. sordidus* and *L. armipes* (=*albostriatus*, Fab., Stål) to *Beosus*; *L. verbasci*=*Emblethis platychilus* (Fieb.). *Salda nemoralis* is a *Temnostethus*=*lucorum* (Fieb.); *S. campestris* is a *Lyctocoris*=*domesticus* (Fieb.).

On the Chinch-bug (*Micropus leucopterus*), see Riley, Pract. Entom. i. pp. 47–48; see also *l. c.* p. 95.

Lamproplax *, g. n., Douglas & Scott, Ent. M. Mag. iv. p. 243, pl. 2. fig. 1. Allied to *Drymus* (Fieb.); antennæ longer and more slender, joint 1 projecting one-half beyond apex of head, 2 one-fourth longer than 1, 3 equal to 1, 4 a little longer; pronotum nearly quadrate, emarginate in front, narrowly margined at the sides, which are very slightly sinuate; anterior tibiæ straight, finely hairy beneath. Sp. *L. sharpi*, sp. n., Dougl. & Scott, *l. c.* p. 244, Dumfriesshire.

Mimicus, g. n., Douglas & Scott, Ent. M. Mag. v. p. 65. Allied to *Lamproplax* (Dougl. & Scott); oblong; antennæ slender, joint 1 passing apex of head, 2 one-third longer; rostrum reaching second coxæ, joint 1 shorter than head; pronotum transverse, subquadrate, sides straight, scarcely margined; anterior femora incrassate, with three slender spines beneath; joint 1 of posterior tarsi twice as long as 2 and 3 together. Sp. *M. nitidus*, sp. n., Dougl. & Scott, *l. c.* p. 66, near Nazareth.

Lygæosoma tristrami, sp. n., Douglas & Scott, Ent. M. Mag. v. p. 31, Palestine.

Calyptonotus sanguineus, sp. n., Douglas & Scott, *l. c.* p. 32, and *C. æthiops*, sp. n., Dougl. & Scott, *l. c.* p. 65, plains of Jordan.

Lasiocoris flori, sp. n., Douglas & Scott, *l. c.* p. 67, plains of Jordan.

Papirius grossus, sp. n., Haglund, Stett. ent. Zeit. 1868, p. 162, origin unknown.

Cæcigenia.

Stål (Kongl. Svenska Vet.-Akad. Handl. vii. pp. 79–85) identifies the following Fabrician species:—*L. festivus* and *schlanbuschii* belong to *Physopelta*; *L. gibbus*=*lineola* (Linn.); *L. lunatus*=*Acinocoris calidus* (Hahn); *L. boerhaviæ* and *coquebertii* belong to *Antilochus* (Stål); *L. varicornis*=*Odontopus sanguinolens* (Am. & Serv.); *L. sanguineus*+*cruentus*+*hæmatideus*=*Dindymus augur* (Stål), and *L. albicornis* and *amboinensis* also belong to *Dindymus*; *L. guincensis*=*longirostris* (Drury), and belongs to *Roscius*, subg. *Callibaphus*; *Lygæus faber* is the type of a new genus, *Melamphaus*; *L. olivaceus* and *koenigii* belong to *Dysdercus*; *L. annulus*=*Dysdercus ruficollis* (Linn.), and *L. suturalis*=*D. andreæ* (Linn.).

Melamphaus, g. n., Stål, Kongl. Svenska Vet.-Akad. Handl. vii. p. 83. Allied to *Roscius* (Stål); joints 3 and 4 of antennæ of equal length, or 4 scarcely longer than 3; third and fourth ventral incisures curved towards the sides. Type *Lyg. faber* (Fab.).

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* The genus is named *Lampronotus* (*l. c. sup.*), but changed to *Lamproplax* (*l. c.* p. 265). The species is said to be probably identical with *Pach. piceus* (Flor.).

Capsina.

Stål (Kongl. Svenska Vet.-Akad. Handl. vii. pp. 85–90) identifies the following Fabrician species:—*Capsus fulvicollis* is an *Ecritotarsus*; *C. bimaculatus, sexpunctatus* (=*ruficollis*, Fab.), *L. lineatus* (=4-*guttatus*, Say), and *L. saltatorius* (=*fulvomaculatus*, De G.) belong to *Calocoris*; *L. floralis* (=*vividus*, Fab.) is a *Phytocoris* and=*P. divergens* (Fieb.); *C. tyrannus*=*ater* (Linn.); *C. schach* (=*miniatus*, Fieb.) and *capillaris* (=*danicus*) belong to *Deræocoris*; *L. tripustulatus* belongs to *Liocoris*; *C. unifasciatus* (=*semiflavus*, Hahn)=*Pœciloscytus unifasciatus* (Fieb.); *C. flavovarius*=*Orthops flavovarius* (Fieb.); *Miris decrepitus*=*Stiphrosoma leucocephala* (Linn.); *Salda coriacea* is an *Orthocephalus*=*mutabilis* (Fieb.); *L. alni* is a *Psallus*=*querceti* (Fieb.); *M. pallens*=(*Phylus*) *melanocephalus* (Linn.); *M. cingulatus* and *C. filicornis* belong to *Lopus*, and the former=*albomarginatus* (Hahn); *Miris lateralis*=(*Leptopterna*) *dolabrata* (Linn.).

Macrocoleus solitarius (Meyer) is figured by Douglas & Scott, Ent. M. Mag. iv. pl. 2. fig. 4.

New species:—

Grypocoris, g. n., Douglas & Scott, Ent. M. Mag. v. p. 116. Allied to *Deræocoris*; head triangular, middle lobe much produced; antennæ as long as the body, joint 2 clavate; rostrum reaching posterior coxæ; pronotum elongate, with a narrow collar and two calli, sides constricted in front, posterior angles acute, elevated; posterior legs and the last joint of their tarsi very long. Sp. *G. fieberi*, sp. n., Dougl. & Scott, *l. c.* p. 117, plains of Jordan.

Litosoma bicolor, Douglas & Scott, Ent. M. Mag. iv. p. 267, pl. 2. fig. 3, Surrey.

Pithanus marshalli, Douglas & Scott, Ent. M. Mag. v. p. 114, Nazareth.

Deræocoris amœnus, Douglas & Scott, *l. c.* p. 115, plains of Jordan.

Camptobrochis serenus, Douglas & Scott, *l. c.* p. 135, Baalbec.

Stiphrosoma amabilis, Douglas & Scott, *l. c.* p. 136, Hebron.

Membranacea.

Stål (Kongl. Svenska Vet.-Akad. Handl. vii. pp. 91–97) identifies the following Fabrician species:—*Acanthia hemiptera* is an *Acanthia*; *Aradus elevatus* is a *Tingis* of the subg. *Tropidocheila*, as also *Tingis sacchari* and *T. sidæ*; *T. costata* is a *Laccometopus*; *T. gossypii* is a *Galeatus*; *Syrtis carinata* and *marginata* belong to *Phymata*; *S. manicata* (=*cimicoides*, Swed.), *prehensilis* (=*pallidus*, Westw.), and *crassimana* belong to *Macrocephalus*; *Aradus lanceolatus* is an *Alyattes*; *A. lunatus*=*Dysodius lunatus*; *A. acuminatus* and *cordatus* belong to *Hesus* (Stål); *A. albipennis* and *membranaceus* belong to *Brachyrhynchus*; and *A. spinosus* is the type of a new genus, *Melanosterphus*.

Dictyonota fieberi is figured by Douglas & Scott, Ent. M. Mag. iv. pl. 2. fig. 2.

Melanosterphus, g. n., Stål, Kongl. Svenska Vet.-Akad. Handl. vii. p. 97. Elongate, narrow, sides straight, parallel; head broad, with a dichotomous process at apex, a long, curved spine before the eyes, and a strong spine be-

hind them; bucculæ percurrent, slightly divergent behind; thorax rather broader than long, rectangular. Type *Aradus spinosus* (Fab.).

Alyattes eximius, sp. n., Haglund, Stett. ent. Zeit. 1868, p. 163, Amazons.

Reduviina.

Stål (Kongl. Svenska Vet.-Akad. Handl. vii. pp. 97–131) identifies numerous Fabrician species of this family as follows:—*Reduvius diadema*=(*Sinea*) *multispinosa* (De G.); *Zelus elevatus* belongs to *Plœogaster* and=*Aricosus cliens* (Stål); the species of *Plœogaster* are tabulated, p. 98, and the two genera (*Dicrotelus*, Erichs., and *Nyllius*, Stål) which Stål separates as his subfamily *Dicrotelida* (pp. 97, 98, note); *Z. ruficornis* belongs to *Aristippus* (Stål), the species of which are tabulated, p. 99; *Zelus octospinosus*=*macilentus* (Burm.) and belongs to *Heza*, the species of which are tabulated p. 100; *Z. præcatorius* belongs to *Nagusta* (Stål); *Z. heros* belongs to *Isyndus* (Stal), and is distinct from *I. heros* (Stål), which is named *I. reticulatus* (p. 101); *Z. bispinosus* is an *Euagoras*; *Z. tipuliformis* is a *Pisilus*; *Z. sexdens* and *spinosus* belong to *Repipta* (Stål); *Z. fasciatus* is a *Graptocleptes* and=*Myocoris gracilis* (Burm.); *Z. ichneumonius* is a *Cosmonyttus* (Stål); *Z. ciliatus* belongs to *Debilia* (Stål); *Red. clavipes* and *gibbus* belong to *Notocyrtus*, the species and subgenera of which are tabulated (p. 105), the latter=*Saccoderes vesiculosa* (Am. & Serv.); *R. cinctus* is a *Milyas*=*Harp. cinctus* (H.-Sch.); *Z. festinans* is the type of a new genus, *Ischnoclopius*; *Z. means*, *errans* (=*cursitans*), and *vagans* belong to *Zelus* (s. str.); *Z. spheyeus*, *pedestris*, *dispar*, and *erythrocephalus* belong to *Diplodus*; *Z. bifidus* belongs to *Sycanus*; *Red. fuscipes*, *marginellus*, *rufipennis*, and *leucocephalus* (=*Harp. flavus*, Sign.) belong to *Reduvius* (s. str.); *R. iracundus* (=*cruentus*) and *maurus* (=*tibialis*) belong to *Rhinocoris*; *R. lineola* (=*morbillosus*)=*Micrauchenus lineola* (Am. & Serv.); *R. 2-pustulatus*=*Apiomerus cylindripes* (Burm.)=*Ponerobia rubronotata* (Ann. & Serv.); *R. cylindripes*=*Beharus lunatus* (Am. & Serv.); *R. rufipes* (=*lunatus*) belongs to *Manicocoris* and=*Apiom. capucinus* (H.-Sch.); *R. crinipes*+*Z. longimanus*=*hirtipes* (De G.)=*nigripes* (Linn.), which is the type of a new genus, *Cadliclopius*; *R. flavipes* is an *Agriocoris*; *R. flavicans* belongs to *Heniartes* and=*R. stollii* (Le P. & Serv.); *R. serripes* is a var. of *flavicans*; *R. pilipes*, *lanipes*, and *crassipes* belong to *Apiomerus*, and the last=*R. limitaris* (Say)=*Herega rubrolimbata* (Am. & Serv.); *R. nigripennis* is a *Mendis* (Stål)=*M. sanguinaria* (Stål); *R. pilicornis* and *crudelis* belong to *Larymna* (Stål); *R. hirticornis*=*R. analis* (Pal.-B.)=*Zirta hirticornis* (Stål); *R. albomarginatus*=*erythrocephalus* (Wolff) belongs to *Santosia*; *R. lugens* is a *Pothea* distinct from *P. lugens* (Stål); *R. stria* and *carinata* belong to *Sirthenca*, and the former=*Pirates roseus* (H.-Sch.); *R. 2-punctatus* (=*hybridus*, Scop.) and *chiragra* belong to *Pirates* (s. str.); *R. cruciger* and *elegans* belong to *Ectomocoris* (Mayr); *R. hamatus* (=*mutillarius*) belongs to *Callisphodrus* (Stål); *R. scutellaris* belongs to *Macrosandalus* (Stal) and=*Pirates myrmecinus* (Erichs.); *R. 4-notatus* (=*P. biguttatus*, Dohrn) is the type of a new genus, *Spilodermus*; *R. gigas* is a *Conorhinus* and=*C. rubrofasciatus* (Stål); the species of *Conorhinus* are tabulated pp. 123–124; *R. sexguttatus* belongs to *Acanthaspis*; *R. villosus* belongs to *Opsicœtus*, the species of which are tabulated p. 125; *R. formicarius* and *litura* belong to *Leogorrus* (Stål), the latter=*Platymeris myrmecoides* (H.-Sch.); *Gerris serripes* belongs to *Phirontis* (Stål); *G. culiciformis* is a

Stenopoda; *G. 5-spinosus*=*Thodelmus 5-spinosus* (Stål); *Zelus recurvatus* and *triacantharis* belong to *Saica*; *Z. femoratus* is a *Bactrodes* (Stål), and *Emesa precatoria* is the type of its genus.

New genera :—

Lochus, g. n., Douglas & Scott, Ent. M. Mag. v. p. 138. Allied to *Coranus*; head not produced behind into a neck; antennæ inserted on tubercles, joint 1 stoutest, 2 a little longer than 1; joint 3 of rostrum longer than 1+2; elytra rudimentary; hind legs very long; joint 3 of tarsi very long; abdomen broadly oval. Sp. *L. squalidus*, sp. n., Dougl. & Scott, *l. c.* p. 139, Jordan.

Saxitius, g. n., Stål, Kongl. Svenska Vet.-Akad. Handl. vii. p. 101, note. Allied to *Archilochus* (Stål); anteocular and postocular parts of head nearly equal, ocelligerous part elevated; joint 1 of antennæ somewhat longer than head; thorax without tubercles on the disk, anterior angles obtusely tuberculated, lateral angles of posterior lobe rounded; legs rather short. No type indicated.

Vachiria, g. n., Stål, *l. c.* p. 101, note. Allied to *Euagoras*; thoracic lobes armed on each side with a row of small acute spinules or tubercles. No type indicated.

Corcia, g. n., Stål, *l. c.* p. 103, note. Allied to *Repipta* (Stål), but half the membrane at least projecting beyond the abdomen. No type indicated.

Aprepolestes, g. n., Stål, *l. c.* p. 111, note. Allied to *Callilestes* (Stål); scutellum narrowly produced at apex, produced part slightly depressed, not foliaceous; antennæ rather short, joint 1 somewhat thickened, gradually becoming slender towards apex; joint 1 of rostrum extending to the middle of the eyes; posterior lobe of thorax about twice as broad as anterior; legs moderate, anterior femora thickened. Type *Reduvius cinerascens* (Stål).

Pœcilobdallus, g. n., Stål, *l. c.* p. 111, note. Allied to *Sphedanolestes* (Stål); postocular part of head longer than anteocular part, ocelligerous part slightly elevated, a little lower than anteocular part. Sp. *Reduvius gratiosus* and *formosus* (Stål).

Trachylestes, g. n., Stål, *l. c.* p. 111, note. Allied to preceding; postocular part of head longer than anteocular part, having two minute setigerous tubercles, anteocular part and ocelligerous part of equal height. Sp. *Reduvius aspericollis* (Stål).

Amaurocloptus, g. n., Stål, *l. c.* p. 114, note. Allied to *Bcharus*; anterior femora somewhat longer than posterior, thickened; anterior tibiæ elongate, very slightly arched downwards before and upwards beyond the middle, with a delicate furrow at the apex above; apical angles of thorax armed with a thickish porrect spine; hemelytra scarcely passing apex of abdomen; apical process of anal segment in ♂ bifid at apex. No type indicated.

Ischnoclopius, g. n., Stål, *l. c.* p. 106. Allied to *Zelus*; anteocular and postocular parts of head nearly of equal length; joint 1 of rostrum much shorter than anteocular part of head; apex of abdomen widened; anterior cell of membrane twice as wide as the posterior, transverse. Type *Zelus festinans* (Fab.).

Calliclopius, g. n., Stål, *l. c.* p. 114. Allied to *Manicocoris*; head a little longer than posterior lobe of thorax, concave between eyes, with an obsolete

tubercle before each eye, postocular part about twice as long as anteocular; neck cylindrical. Type *Cimex nigripes* (Linn.).

Spilodermus, g. n., Stål, *l. c.* p. 122. Allied to *Cleptocoris* and *Sphodrocoris* (Stål); anteocular part of head somewhat longer than postocular part; neck with a small tubercle on each side; thorax distinctly constricted behind the middle, anterior lobe narrower than and about twice as long as the posterior, and scarcely if at all impressed at the base; scutellum triangular, subequilateral, its apex slightly produced and turned up; abdomen a little broader than hemelytra; anterior femora thickened, becoming slender towards apex; tibiæ convex above, pit occupying scarcely one-half of the anterior and little more than one-third of the intermediate; posterior tarsi long, last joint nearly as long as 1+2. Sp. *Red. 4-notatus* (Fab.) = *Pirates biguttatus* (Dohrn).

Dichrobdallus, g. n., Stål, *l. c.* p. 116, note. Allied to *Apiomerus*; eyes more distant in front than behind; ocelli about twice as far apart as the eyes behind; anterior femora and coxæ together somewhat longer than posterior, but shorter than anterior tibiæ. Type *Apiomerus bicoloripes* (Stål).

Callibdallus, g. n., Stål, *l. c.* p. 117, note. Allied to *Apiomerus*; intermediate tibiæ gradually thickened towards apex, apical part suddenly incurved and becoming slender; eyes much more distant in front than behind; ocelli nearly twice as far apart as the eyes behind; anterior femora and coxæ together equal in length to posterior and to anterior tibiæ. No type indicated.

Nularda, g. n. Stål, *l. c.* p. 118, note. Allied to *Ectrichodia*; joint 2 of antennæ much longer than 1; posterior lobe of thorax about twice as long as anterior; anterior femora not thickened, unarmed. No type indicated.

Belminus, g. n., Stål, *l. c.* p. 123, note. Allied to *Rhodinus* (Stål); but ocelli obsolete, scarcely distinguishable. No type indicated.

Eratyrus, g. n., Stål, *l. c.* p. 123, note. Allied to *Rhodinus*; antennæ inserted a little further from the eyes than from the apex of the head; anterior lobe of thorax bispinose, lateral angles of posterior lobe acutely spinous. No type indicated.

Meccus, g. n., Stål, *l. c.* p. 123, note. Allied to *Conorhinus*; body shortly pilose; thorax distinctly constricted, lateral angles of posterior lobe slightly prominent, anterior lobe 4-tuberculate, middle tubercles elevated, conical. No type indicated.

Lamus, g. n., Stål, *l. c.* p. 123, note. Allied to *Conorhinus*; antennæ inserted near the eyes. No type indicated.

Leogorrus, g, n., Stål, *l. c.* p. 125, note. Allied to *Acanthaspis*; femora armed beneath at the apex on each side with a small acute tooth or spicule. Sp. *Red. formicarius* and *litura* (Fab.).

Gnathobleda, g. n., Stål, *l. c.* p. 126, note. Allied to *Pygolampis*; apex of head produced into a short obtuse spine on each side of base of rostrum; joint 1 of rostrum reaching posterior margin of eyes, nearly equal in length to 2 & 3 together; anterior femora with a double row of spinules. No type indicated.

Ctenotrachelus, g. n., Stål, *l. c.* 127, note. Allied to *Apronius* (Stål); head with an obtuse spinule on each side of the base of the rostrum, and with several strong setigerous spines on each side beneath. Type not indicated.

Pnohirmus, g. n., Stål, *l. c.* p. 127, note. Allied to *Stenopoda*; anteocular part of head somewhat longer than postocular; joint 1 of rostrum equal in length to 2+3; eyes subrotundate. No type indicated.

Rhyparoclopius, g. n., Stål, *l. c.* p. 127, note, =*Nitornus* (Stål, Hem. Afr.); body and legs without granules or spines; anteocular part of head nearly three times as long as postocular. Type not indicated.

Podormus, g. n., Stål, *l. c.* p. 127, note. Allied to preceding; the whole body densely armed with granules or spines; anteocular part of head somewhat longer and more slender than postocular. Type not indicated.

Narvesus, g. n., Stål, *l. c.* p. 128, note. Allied to *Diaditus* (Stål); anteocular part of head about twice as long as postocular, produced more or less beyond insertion of antennæ; joints 1 & 2 of rostrum of equal length; anterior femora very slightly thickened, unarmed, posterior passing apex of abdomen. No type indicated.

Spilalonius, g. n., Stål, *l. c.* p. 128, note. Allied to preceding; joint 1 of rostrum shorter than 2; anterior femora thickened, spinulous beneath, posterior reaching apex of abdomen. No type indicated.

Oncerotrachelus, g. n., Stål, *l. c.* p. 130, note. Allied to *Saica* and *Tagalis*; postocular part of head tumid, rounded on both sides, oculigerous part thicker, joint 1 of rostrum reaching beyond eyes; thorax as long as broad; apex of scutellum produced backwards into a long spine; legs rather short; anterior tibiæ unarmed. Sp. *Reduvius acuminatus* (Say).

New species:—

Platymerus robbianus, J. A. Smith, Proc. Roy. Phys. Soc. Edinb. 1864–65, p. 312, Old Calabar.

Plæogaster (*Aricosus*) *fabricii*, Stål, Kongl. Svenska Vet.-Akad. Handl. vii. p. 98, note, South America.

Pothea œnescens, Stål, *l. c.* p. 119, Rio de Janeiro.

Emesa dohrni, Douglas & Scott, Ent. M. Mag. v. p. 136, Elisha's Fountain.

Saldidæ.

Stål (Kongl. Svenska Vet.-Akad. Handl. vii. pp. 90–91) states that *Salda zostereæ* and *flavipes* (Fab.)=*littoralis* (Linn.), *S. striata* (Fab.)=*xanthochila* (Fieb.), and *S. pallipes* (Fab.) is a var. of *saltatoria* (Linn.),

Stål (Œfvers. Kongl. Vet.-Akad. Förh. 1868, pp. 387–393) publishes a synopsis of the Swedish species of the genus *Salda*, of which he recognizes 14, namely:—1. *S. littoralis* (Linn.), incl. *zostereæ* and *flavipes* (Fab.); 2. *S. morio* (Zett.); 3. *S. riparia* (Fall.); 4. *S. scotica* (Curt.)=*hirsutula* (Flor.), *littoralis* (Fieb.), and *riparia* (Dougl. & Scott); 5. *S. affinis* (Zett.)=*luteipes* (H.-Sch.) and *riparia* (Sahlb.); 6. *S. orthochila* (Fieb.)=*luteipes* (Flor.); 7. *S. saltatoria* (Linn.)=*pallipes* (Fab.); 8. *S. marginalis* (Fall.)=*opacula* (Zett.), *costalis* (Sahlb.), and *marginalis* (Fieb.); 10. *S. lateralis* (Fall.)=*pulchella* (Curt.), *bicolor* (Curt.), and *eburnea* (Fieb.); 11. *S. pilosa* (Fall.)=*sericans* (Stål); 12. *S. geminata* (Costa); 13. *S. elegantula* (Fall.); 14. *S. cincta* (H.-Sch.); and 1 new species.

Salda borealis, sp. n., Stål, *l. c.* p. 391, Lapland.

Hydrometridæ.

Stål (Kongl. Svenska Vet.-Akad. Handl. vii. pp. 131–133) identifies

certain Fabrician species of this family:—*Velia rivulorum* and *Hydrometra aptera* are well known to be identical; *Hydrometra abbreviata* is described from the larva of *Limnotrechus lateralis* or *asper*; *Hyd. cursitans* and *fluviorum* belong to *Limnometra* (Mayr); *H. hyalinus* and *fossarum* are referred to a new genus, *Limnogonus*.

Stål (Œfvers. Kongl. Vet.-Akad. Förh. 1868, pp. 395–398) publishes a synopsis of the Swedish species of this family, of which he recognizes 7, divided by him into the following genera:—

I. Antennæ more than half as long as the body, slender; posterior tibiæ and tarsi together much longer than intermediate tibiæ
1. *Limnoporus* (Stål).

II. Antennæ not longer than head and thorax together; posterior tibiæ and tarsi together but little longer than intermediate tibiæ.

A. Joint 1 of antennæ longer than 2 & 3 together, 2 & 4 of equal length, each a little longer than 3 ..... 2. *Hygrotrechus* (Stål).

B. Joint 1 of antennæ subequal to 2 & 3 together, or rather shorter, 4 longe rthan 3..... 3. *Limnotrechus* (Stål).

The species referred to these genera are the following:—To *Limnoporus*, *Gerris rufoscutellata* (Lat.)=*lacustris* (Fall.); to *Hygrotrechus*, *Cimex najas* (De G.)=*aptera* (Schum.) and also *Hydr. paludum* (Fab.) and *ventralis* (Fieb.); and to *Limnotrechus*, *Gerris thoracica* (Schum.)=*thoracica* (Flor.), *Hydr. aspera* (Fab.), *Cimex lacustris* (Linn.), *Hydr. odontogaster* (Zett.), and *Gerris argentata* (Schum.), and also *Hydr. costæ* (H.-Sch.), *lateralis* (Schum.), *gibbifera* (Schum.), and *servillei* (Frei-Gesn.).

Limnogonus, g. n., Stål, *l. c.* p. 132. Allied to *Limnometra*; anterior tarsi with joint 1 scarcely more than half the length of 2; apical angles of last abdominal segment not spinous. Sp. *Hyd. hyalina* and *fossarum* (Fab.); *Gerris discolor*, *parvula*, and *franciscana* (Stål).

Galgulidæ.

Naucoris oculata (Fab.)=*Galgulus bufo* (H.-Sch.), Stål, Kongl. Svenska Vet.-Akad. Handl. vii. p. 133.

Nepidæ.

Stål (Kongl. Svenska Vet.-Akad. Handl. vii. pp. 134–136) identifies the following Fabrician species:—*Naucoris nepæformis* is a *Monomyx* and =*raptorius* (Burm.)=*bipunctatus* (Stål); *N. raptoria* is also a *Monomyx*=*raninus* (H.-Sch.)=*fusco-conspersus* (Stål); *N. nepoides* is an *Appasus*, and = *natator* (Am. & Serv.)=*luridus* (Stål); *Nepa grossa* (S. R.)=*Laccotrephes grossus* (Stål olim) changed to *L. fabricii* (*l. c.* p. 134); *N. grossa* (E. S.)=*Laccotrephes*) *ruber* (Linn.); *N. nigra* and *maculata* belong to *Laccotrephes*, and the latter=*N. grisea* (Guér.); *Ranatra filiformis* and *elongata* remain in the genus *Ranatra*.

Notonectidæ.

Stål (Kongl. Svenska Vet.-Akad. Handl. vii. pp. 136–138) identifies the following Fabrician species:—*N. marmorea* is a var. of *N. glauca* (Linn.); *N. indica* belongs to *Enithares*; *N. ciliata* and *pallipes* belong to *Anisops*, and perhaps respectively=*hyalinus* and *platycnemis* (Fieb.); *Sigara coleoptrata*, *nigripennis*, and *hyalinipennis* belong to *Corixa*.

Corixa scotti, sp. n. (Fieb. MS.), Douglas and Scott, Ent. M. Mag. iv. p. 271, Argyleshire.

Homoptera.

Stridulantia.

Acrilla adipata (Stål) is figured by Walker, Journ. Linn. Soc. Zool. x. pl. 3. fig. 7.

Packard publishes (Amer. Natural. ii. pp. 331–333) a notice of the history of *Cicada septendecim*. The bite of this insect appears to be dreaded in some parts of the United States, and instances of injurious consequences from it are here referred to. The same journal contains some observations on the habits of this species by W. Kite (*l. c.* p. 442).

A list of "Locust-years," prepared by Fitch, is published in Practical Entomologist, i. p. 19.

New species:—

Platypleura catocaloides, Walker, Journ. Linn. Soc. Zool. x. p. 82, Amboyna, Ceram, Morty.

Oxypleura canescens, Walker, *l. c.* p. 83, Aru, Celebes.

Dundubia. Walker (*l. c.*) describes 9 new Malasian species of this genus, namely, *D. nebulilinea*, p. 84, Sumatra; *D. recedens*, p. 85, New Guinea; *D. latilinea*, p. 85, Penang; *D. impar*, p. 86, Waigiou; *D. lata*, p. 87, Bouru; *D. subapicalis*, ibid., Aru, Batchian, Ceram, Gilolo, Ternate; *D. junctivitta*, p. 89, Ternate; *D. picta*, p. 90, Sumatra; *D. significata*, p. 91, Morty, Batchian.

Fidicina timorica, Walker, *l. c.* p. 91, Timor; *F. tondana*, *l. c.* p. 92, Tondano; and *confinis*, ibid., Penang.

Cicada occidentalis, Walker, Lord's Naturalist in Vancouver's Island &c. ii. p. 339, Vancouver's Island.

Cicada. Walker (Journ. Linn. Soc. Zool. x.) describes 5 new Malasian species of this genus, viz.:—*C. immotabilis*, p. 93, Morty; *C. subnotata*, ibid., Batchian; *C. stigma*, ibid., Gilolo; *C. quadrifida*, ibid., Aru; *C. parallela*, p. 94, Ceram.

Cephaloxis fulva, Walker, *l. c.* p. 94, New Guinea?

Mogannia sesioides, Walker, *l. c.* p. 95, Sumatra.

Huechys cuprea, Walker, *l. c.* p. 95, Tondano.

Fulgoridæ.

The following species are figured by Walker (Journ. Linn. Soc. x. pl. 3):—*Ulasia magica* (Stål), fig. 2; *Hariola tiarata* (Stål), fig. 4; *Birdantis decens* (Stål), fig. 14; *Acarna rostrifera* (Stål), fig. 3; *A. notaticollis* (Stål), fig. 9; and *Corethrura funebris* (Stål), fig. 8.

C. A. Dohrn publishes Burmeister's description of *Fulgora mitrii* from the Anales del Museo publico de Buenos Aires (Stett. ent. Zeit. 1868, pp. 287–289).

New genera and species:—

Catara, g. n., Walker, Journ. Linn. Soc. Zool. x. p. 115. Sp. *C. subdivisa*, sp. n., Walker, *l. c.* p. 115, Morty.

Gozarta, g. n., Walker, *l. c.* p. 116. Sp. *G. zebra*, sp. n., Walker, *l. c.* p. 116, Tidon.

Errada, g. n., Walker, *l. c.* p. 116. Sp. *E. funesta*, sp. n., Walker, *l. c.* p. 117, Mysol.

Bodecia, g. n., Walker, *l. c.* p. 117. Sp. *B. varipes*, sp. n., Walker, *l. c.* p. 117, Mysol.

Interamma, g. n., Walker, *l. c.* p. 118. Sp. *I. ascendens*, sp. n., Walker, *l. c.* p. 118, Morty; *I. angusta*, sp. n., Walker, ibid., pl. 3. fig. 5, Mysol; *I. delicata*, sp. n., Walker, ibid., pl. 3. fig. 6, New Guinea; and *I. subvaria*, sp. n., Walker, *l. c.* p. 119, Mysol.

Gilda, g. n., Walker, *l. c.* p. 129 (*Issites*). Sp. *G. vittiventris*, sp. n., Walker, *l. c.* p. 129, New Guinea.

Gabalœca, g. n., Walker, *l. c.* p. 170 (*Ricaniides*). Sp. *G. retifera*, sp. n., Walker, *l. c.* p. 171, New Guinea.

Aphœna scriptifacies, Walker, Journ. Linn. Soc. Zool. x. p. 97; Sumatra; *A. basigera*, Walker, ibid., Sumatra; *A. necœra*, Walker, *l. c.* p. 98, Menado, Celebes.

Polydictya collaris, Walker, *l. c.* p. 98, pl. 3. fig. 10, Morty.

Cyrene telifera, Walker, *l. c.* p. 99, Aru, Ceram, Morty.

Ulasia reversa, Walker, *l. c.* p. 99, pl. 3. fig. 2, Aru, New Guinea.

Acarna subapicalis, Walker, *l. c.* p. 101, Morty.

Dictyophora surgens, Walker, *l. c.* p. 101, Amboyna, Ceram, Flores, Sula; *D. cribrata*, Walker, *l. c.* p. 102, Makian, Celebes; *D. nigrifinis*, Walker, ibid., pl. 3. fig. 1, Kaisoa, Morty, Mysol, New Guinea, Waigiou.

Cixius. Walker (*l. c.*) describes the following new species of this genus:—*C. perturbatus*, p. 103, Mysol; *C. inficitus*, ibid., Mysol; *C. ferrugineus*, p. 104, New Guinea; *C. luridus*, ibid., Mysol; *C. signifer*, ibid., Morty; *C. reductus*, p. 105, and *C. caliginosus*, ibid., Mysol.

Brixia. Walker (*l. c.*) describes 23 new Malasian species of this genus, namely:—*B. tenebrosa*, p. 106, Ceram; *B. rufula*, ibid., New Guinea; *B. palliceps*, ibid., Mysol, New Guinea; *B. atratula*, p. 107, Morty; *B. sublucida*, ibid., New Guinea; *B. marginata*, ibid., New Guinea; *B. varia*, p. 108, Sula; *B. variegata*, ibid., Sula; *B. bicolor*, p. 109, New Guinea; *B. puncticosta*, ibid., Morty, Mysol; *B. congrua*, p. 110, Mysol; *B. guttata*, ibid., New Guinea; *B. concinnula*, ibid., Sula; *B. opaca*, p. 111, *B. terminalis*, ibid., and *B. nanula*, p. 112, New Guinea; *B. nivea*, ibid., Mysol; *B. subpunctata*, ibid., Flores; *B. parviceps*, p. 113, Mysol; *B. pictipennis*, ibid., Morty; *B. intertecta*, p. 114, New Guinea; *B. humeralis*, ibid., New Guinea; and *B. testacea*, p. 115, Mysol.

Bidis liturifrons, Walker, *l. c.* p. 119, Aru, Gilolo, Ceram, Morty, Mysol, New Guinea; *B. privata*, Walker, *l. c.* p. 120, Mysol.

Delphax longicornis, Walker, *l. c.* p. 120, and *D. media*, Walker, *l. c.* p. 121, Mysol.

Issus. Walker (*l. c.*) describes 5 new Malasian species of this genus:—*I. herbidus*, p. 121, Mysol; *I. biplaga*, p. 122, Morty and Aru; *I. piceus*, p. 123, Aru, New Guinea; *I. dimidiatus*, ibid., Mysol; *I. bifascia*, ibid., New Guinea.

Hysteropterum. Walker (*l c.*) describes 10 new Malasian species of this genus:—*H. sodale*, p. 124, Sumatra; *H. tumidulum*, p. 125, Ceram; *H. lœve*, ibid., Ceram; *H. morosum*, ibid., Morty; *H. nanulum*, p. 126, Morty; *H.*

spissum, ibid., Sula; *H. informe*, p. 127, Gilolo; *H. minax*, ibid., Ceram; *H. invarium*, p. 128, Mysol; *H. vittatum*, ibid., New Guinea.

Hemisphærius. Walker (*l. c.*) describes 10 new Malasian species of this genus:—*H. lativitta*, p. 130, Morty; *H. nigrolineatus*, ibid., Morty; *H. cervinus*, p. 131, New Guinea; *H. plagiatus*, ibid., Sula; *H. concolor*, ibid., *H. collaris*, ibid., and *H. lunaris*, p. 132, New Guinea; *H. submarginalis*, ibid., Gilolo; *H. viridis*, p. 133, Morty; *H. dilatatus*, ibid., Flores.

Eurybrachys isabella (White), Walker, *l. c.* p. 134, Sumatra.

Thracia. Walker (*l. c.*) describes the following 14 new Malasian species of this genus:—*Thracia ephemeralis*, p. 134, Aru, New Guinea, Mysol; *T. limnobialis*, ibid., Sula; *T. scutellaris*, p. 135, Morty; *T. basalis*, ibid., Waigiou; *T. nervosa*, ibid., Mysol, New Guinea; *T. anticalis*, p. 136, Mysol; *T. costalis*, ibid., Batchian, Mysol; *T. nivifera*, p. 137, Batchian; *T. dorsalis*, ibid., New Guinea; *T. abrupta*, ibid., Gilolo; *T. rufifinis*, p. 138, Morty; *T. punctipennis*, ibid., Mysol, New Guinea; *T. sexnotata*, p. 139, Aru; *T. annulata*, ibid., Amboyna, Bouru; *T. fasciata*, ibid., Mysol; *T. fuscipennis*, p. 140, Aru; *T. abscissa*, ibid., Sula; *T. albida*, ibid., Sula; *T. albipes*, p. 141, Flores.

Flatoides. Walker (*l. c.*) describes the 5 following new Malasian species of this genus:—*F. subrufescens*, p. 141, Morty, Mysol, New Guinea; *F. fasciatus*, ibid., Waigiou; *F. plagiatus*, p. 142, New Guinea; *F. semialbus*, ibid., Aru, Mysol; *F. simplex*, p. 143, Amboyna, Ceram, New Guinea, &c.

Ricania. Walker (*l. c.*) describes the following 33 new Malasian species of this genus:—*R. subatomaria*, p. 143, Morty; *R. caliginosa*, p. 144, Aru; *R. simplex*, ibid., Waigiou, *R. rufifrons*, p. 145, Waigiou; *R. specularis*, ibid. Flores; *R. furcifera*, p. 146, Sumatra; *R. fenestrata*, ibid., Tondano; *R. atomaria*, p. 147, Batchian, New Guinea, &c.; *R. patula*, p. 150, Batchian; *R. nigra*, ibid., Morty; *R. binotata*, p. 149, New Guinea, Aru; *R. bimaculata*, ibid., Batchian; *R. impervia*, p. 151, Gilolo; *R. densa*, ibid., Flores; *R. trinotata*, p. 152, New Guinea; *R. lurida*, ibid., New Guinea; *R. bicincta*, p. 153, Morty; *R. subapicalis*, p. 153, Aru; *R. albipes*, p. 154, Batchian; *R. varia*, p. 155, Flores; *R. aperta*, p. 156, Batchian; *R. viridicollis*, ibid., Sula; *R. spatiosa*, p. 157, Mysol; *R. divisura*, ibid., New Guinea and Ké; *R. basigera*, p. 158, Amboyna; *R. consobrina*, p. 159, Gilolo, Batchian; *R. colligata*, ibid., Ceram; *R. latipennis*, p. 160, pl. 3. fig. 14, Aru, Batchian; *R. emarginata*, ibid., Sula; *R. humeralis*, p. 161, Mysol; *R. consentanea*, ibid., Mysol; *R. antica*, p. 162, New Guinea; *R. cribrata*, ibid., pl. 3. fig. 13, Mysol.

Pochazia contigua, Walker, *l. c.* p. 163, Batchian, Ternate; *P. inclyta*, *l. c.* ibid., Makian, Celebes.

Nogodina. Walker (*l. c.*) describes the following 10 new Malasian species of this genus:—*N. signatifrons*, p. 164, New Guinea; *N. guttifrons*, ibid., Sula, Batchian, New Guinea, &c.; *N. strictifascia*, p. 165, New Guinea; *N. invaria*, p. 166, Sula; *N. concolor*, ibid., Morty; *N. sublineata*, p. 167, Sula, Celebes; *N. decisa*, p. 168, Mysol, Aru, New Guinea; *N. plena*, ibid., Ké; *N. venosa*, p. 169, Flores; *N. alligata*, p. 170, Ceram.

Nephesa. Walker (*l. c.*) describes the following 18 new Malasian species of this genus:—*N. intacta*, p. 171, Aru; *N. amœna*, p. 172, Morty, Sula, Gilolo, Ceram; *N. conficita*, p. 172, Gilolo; *N. spargula*, p. 173, New Guinea; *N. chlorospila*, ibid., Mysol, New Guinea; *N. roseosparsa*, p. 174, Mysol; *N. rufilinea*, ibid., Mysol; *N. lineola*, p. 175, Lombok; *N. marginalis*, ibid.,

Gilolo; *N. amata*, ibid., Waigiou; *N. subjecta*, p. 176, Makian, Celebes; *N. decolor*, ibid., Mysol, Waigiou; *N. albescens*, p. 177, Mysol, New Guinea; *N. monoleuca*, ibid., *N. obtusa*, ibid., and *N. nivosa*, p. 178, New Guinea; *N. invasa*, ibid, Waigiou; *N. antica*, ibid., New Guinea.

Flata subacuta, Walker, *l. c.* p. 179, Mysol; *F. combinata*, Walker, *l. c.* ibid., Makian, Celebes; *F. quadriguttata*, Walker, ibid., New Guinea; *F. chloroleuca*, Walker, *l. c.* p. 180, Makian, Celebes.

Colobesthes rectilinea, Walker, *l. c.* p. 180, Sumatra; *C. hastifera*, Walker, ibid., Mysol.

Phronima hamifera, Walker, *l. c.* p. 181, and *P. prunifera*, Walker, ibid., Sumatra.

Cromna quadripunctata, Walker, *l. c.* p. 182, Mysol; *C. centralis*, Walker, ibid., Morty.

Serida proxima, Walker, *l. c.* p. 183, Ké.

Membracidæ.

Stål (Œfvers. Vet.-Akad. Förh. 1867, pp. 551–560) tabulates the genera of the subfamilies Smiliides and Darnides. He remarks that *Smilia unicolor* (Sign.) belongs to *Triquetra*, a genus of the Hoplophorides, and that *Caranota* (Fitch)=*Ophiderma* (Fairm.). To *Smilia* (Fairm.) he gives the name of *Cymbomorpha*, and refers the genus to the Darnides.

Surantus wallacei (Stål) is figured by Walker, Journ. Linn. Soc. Zool. x. pl. 3. fig. 12.

New genera and species:—

Narnia, g. n., Walker, Journ. Linn. Soc. Zool. x. p. 192. Sp. *N. rastrata*, sp. n., Walker, *l. c.* p. 193, Flores.

Poppea, g. n., Stål, Œfvers. Vet.-Akad. Förh. 1867, p. 551. Type *Cyphonia rectispina* (Fairm.).

Antonaë, g. n., Stål, *l. c.* p. 552. Sp. *Ceresa inerassata*, *tigrina*, and *flaccida* (Fairm.).

Ilithucia, g. n., Stål, *l. c.* p. 552. Type *Ceresa morio* (Fairm.).

Melusina, g. n., Stål, *l. c.* p. 552. Sp. *Ceresa ciliata* and *nervosa* (Fairm.), *C. nasuta* (Stål), and some others.

Janthe, g. n., Stål, *l. c.* p. 554. Sp. *Thelia expansa* (Germ.) and *Smilia foliacea* (Stål).

Heranice, g. n., Stål, *l. c.* p. 554. Type *Thelia miltoglypta* (Stål).

Maturna, g. n., Stål, *l. c.* p. 555. Type *Oxygonia ephippigera* (Fairm.).

Hille, g. n., Stål, *l. c.* p. 555. Sp. *Oxygonia conica*, *dorsalis*, and *maculicornis* (Fairm.).

Adippe, g. n., Stål, *l. c.* p. 555. Sp. *Oxygonia alliacea* (Germ.) and *zebrina* (Stål).

Lucilla, g. n., Stål, *l. c.* p. 555. Type *Oxygonia viridula* (Fairm.).

Heliria, g. n., Stål, *l. c.* p. 556. Sp. *Thelia cristata* and *scalaris* (Fairm.).

Optilete, g. n., Stål, *l. c.* p. 556. Type *Thelia porphyrea* (Fairm.).

Archasia, g. n., Stål, *l. c.* p. 556. Sp. *Thelia galeata* (Fab.) and *pallida* (Fairm.).

Hypheus, g. n., Stål, *l. c.* p. 557. Type *Thelia ursus* (Fairm.).

Proterpia, g. n., Stål, *l. c.* p. 557. Type *Hemiptycha rotundicornis* (Fairm.).

Eualthe, g. n., Stål, *l. c.* p. 557. Type *Hemiptycha lævigata* (Fairm.).

Pyranthe, g. n., Stål, *l. c.* p. 558. Sp. *Hemiptycha flava, longicornis*, and *alata* (Fairm.), *chilensis* (Spin.), and many others.

Alcmeone, g. n., Stål, *l. c.* p. 558. Type *Hemiptycha centrotoides* (Fairm.).

Hyphinoë, g. n., Stål, *l. c.* p. 558. Sp. *Hemiptycha cuneata* (Germ.), *camelus* (Gray), and *asphaltina* (Fairm.).

Argante, g. n., Stål, *l. c.* p. 558. Type *Smilia incumbens* (Germ.).

Eumela, g. n., Stål, *l. c.* p. 559. Type *Smilia semiacuta* (Stål).

Heliodore, g. n., Stål, *l. c.* p. 559. Type *Combophora laportei* (Germ.).

Iria, g. n., Stål, *l. c.* p. 559. Sp. *Darnoides carinata* (Walk.), *Smiliorhachis stictica, maculinervis, pilosella*, and *fascifera* (Stål).

Rhexia, sp. n., Stål, *l. c.* p. 560. Sp. *Scaphula flavicans, centro-maculata*, and *alutacea* (Fairm.).

Centrotus. Walker (*l. c.*) describes the following 28 new Malasian species of this genus:—*C. alticeps*, p. 183, Aru; *C. strigatus*, p. 184, *C. albigutta*, ibid., and *C. albilatus*, ibid., New Guinea; *C. forticornis*, p. 185, Celebes; *C. brevivitta*, ibid., New Guinea; *C. pallipes*, ibid., Mysol; *C. semilucidus*, p. 186, Waigiou; *C. femoratus*, ibid., Celebes; *C. piceus*, p. 187, Batchian; *C. congestus*, ibid., Sula; *C. gibbosulus*, ibid, hab. —?; *C. ferrugineus*, ibid., New Guinea; *C. tibialis*, p. 188, New Guinea; *C. contractus*, ibid., Aru; *C. albidus*, ibid., Mysol; *C. subflavipes*, p. 189, New Guinea; *C. densus*, ibid., New Guinea; *C. venosus*, ibid., Tondano; *C. retractus*, p. 190, Morty; *C. conterminus*, ibid., Aru; *C. reductus*, ibid., New Guinea; *C. curtulus*, ibid., Mysol; *C. nubifascia*, p. 191, New Guinea; *C. minusculus*, ibid., Mysol, Sula; *C. biplaga*, ibid., Celebes; *C. constipatus*, p. 192, Mysol; *C. impressus*, ibid., New Guinea.

CICADELLINA.

FIEBER (Verh. zool.-bot. Ges. in Wien, xviii. pp. 449–464) publishes an analytical table of the European genera, and of many species, of the subfamily *Bythoscopida*, in which he includes the genera *Macropsis* (Lew.), *Idiocerus* (Lew.), *Bythoscopus* (Germ.), *Pediopsis* (Burm.), and *Agallia* (Curt.). Most of the species characterized are new.

Tettigonia sitis (Harr.). An account of this species, with figures, is given Walsh, Pract. Entom. ii. p. 51.

New species:—

Macropsis scutellaris, Fieber, Verh. zool.-bot. Ges. in Wien, xviii. p. 451, Austria.

Idiocerus. Fieber describes (*l. c.*) the following as new European species of this genus:—*I. germari*, p. 451 (= ♂ *scurra* + ♀ *crenatus*, Germ.), *I. nobilis*, p. 452, Austria and Sarepta; *I. tibialis*, ibid., Greece, S. Russia, and Austria; *I. striola*, p. 453, Sitka; *I. signatus*, ibid., Switzerland; *I. stali*, ibid., Rhodes; *I. tæniops*, p. 454, Corsica; *I. affinis*, ibid., Austria; *I. fasciatus*, p. 455, Austria; *I. cognatus*, ibid., Austria; *I. h-album*, ibid., Austria; and *I. socialis* (Frey), p. 456, Corsica, Lyons, Greece.

Bythoscopus rufusculus, Fieber, *l. c.* p. 456, Bohemia and Austria; *B. fruticolus*, Fieb. *l. c.* p. 457, Europe; and *B. dubius*, Fieb. ibid., St. Petersburg.

Pediopsis. Fieber (*l. c.*) describes the following as new European species of this genus:—*P. glandacea*, p. 458, Austria; *P. fuscula*, ibid., Irkutsk; *P.*

mendax (Rey), p. 459, France, Russia, Austria; *P. prasina* (Boh.), ibid., Sweden; *P. dispar*, ibid., Spain, Sarepta; *P. mulsanti*, p. 460, S. of France; *P. megerlei*, ibid., Austria?; and *P. freyi*, p. 461, Spain.

Agallia albovenosa, Fieber, *l. c.* p. 462, Spain; *A. aliena*, Fieb. ibid., Carniolia; and *A. obsoleta*, Fieb. *l. c.* p. 463, Andalusia.

Aphididæ.

Boisduval (Ent. Hortic. pp. 235–299) describes at considerable length the structure and habits of the insects of this family, with especial reference to those which abound in gardens &c. He indicates (p. 253) that *Aphis pyri* (Gour.) is not Koch's species, and proposes to name it *A. pyrastri*; he notices (p. 254) a probably new species found on the quince, which he calls *A. cydoniæ*, and describes two new species. Boisduval also gives (pp. 284–298) a list of the species described by Kaltenbach, with brief characters and occasional notes.

Walsh publishes (Pract. Entom. ii. pp. 37–44) a popular account of the history of *Aphides*, with remarks upon their insect enemies.

Planchon (Comptes Rendus, lxvii. pp. 588–594) gives a detailed account of the history of a species of Plant-louse injurious to the vine, to which he gives the name of *Phylloxera vastatrix*.

Phylloxera. A species of this genus is said to have done much mischief to the vines on the left bank of the Rhone, from Arles to Orange. Lichtenstein, Bull. Soc. Ent. Fr. 1868, p. lxx; see also p. xcvi.

Eriosoma lanigera. A. E. Verrill remarks upon this species, and especially notices the occurrence of winged individuals (Pract. Entom. i. p. 21).

Hamamelistes, g. n., Shimer, Trans. Amer. Ent. Soc. i. p. 283. Fore wing with two discoidal veins, first branched, second simple; hind wing with one simple discoidal vein; wings flat in repose; honey-tubes short or obsolete; antennæ short, 3–5 jointed. Sp. *H. cornu*, sp. n., Shimer, *l. c.* p. 283, and *H. spinosus*, sp. n., Shimer, *l. c.* p. 284, Illinois, in galls on *Hamamelis virginica*.

Aphis ilicicola, sp. n., Boisduval, Ent. Hortic. p. 272, South of France, on the evergreen oak; *A.* (*Forda*) *myrmecaria*, sp. n., Boisd. *l. c.* p. 278, among garden-pots, in hothouses, &c.

Phylloxera corticalis, sp. n., Kaltenbach, Verh. naturh. Ver. preuss. Rheinl. und Westph. 1867, p. 44. Red, head and mesothorax and scutellum black, antennæ and spots on the neck brownish; abdomen pyriform, with short tubules; legs pale yellow; wings very large, limpid, shagreened, the last two branch veins originate close together from the anterior one, and not from the marginal vein. In great quantities on the bark of an oak.

Periphyllus laricæ, sp. n., Haliday, Bull. Soc. Ent. Fr. 1868, p. xi, cum fig. p. xii, North of Ireland (on the larch).

Aleurodidæ.

Aleurodes. Signoret has published (Ann. Soc. Ent. Fr. 4e sér. viii. pp. 369–402) a monograph of the species of this genus. He indicates the bibliographical history of the genus, which he characterizes, and of which he describes the following known species:—*A. proletella* (Linn.) = *chelidonii* (Lat.), pl. 10. fig. 3; *A. brassicæ* (Walk.); *A. loniceræ* (Walk.); *A. carpini* (Koch);

A. fragariæ (Walk.), pl. 10. fig. 4; *A. vaporariorum* (Westw.); *A. phillyreæ* (Hal.), pl. 10. fig. 5; *A. immaculata* (Heeger); *A. dubia* (Heeg.); *A. jelinekii* (Frauenf.), pl. 9. fig. 2; *A. aceris* (Geoff.), pl. 10. fig. 1. He cites the descriptions of the following species with which he is unacquainted:—*A. abutilonea* (Hald.); *A. corni* (Hald.); *A. cocois* (Curt.); *A. phalænoides* (Blanch.); *A. tinæoides* (Blanch.); and *A. prenanthis* (Schrank). *Aleurodes euphorbiæ* (F. Löw) is not mentioned by the author. *Coccus lataniæ* (Boisd.) is referred to as a species of doubtful position; Signoret raises it to the rank of a genus under the name of *Boisduvalia*.

Aleurodes. Signoret describes the following new species of this genus:—*A. rubi*, *l. c.* p. 382, pl. 9. fig. 4, on the bramble; *A. capreæ*, *l. c.* p. 384, on *Salix caprea*; *A. quercus*, ibid., pl. 10. fig. 5, on the lower surface of leaves of *Quercus pedunculata*, France, England; *A. avellanæ*, *l. c.* p. 385; *A. fraxini*, *l. c.* p. 386; *A. bergii*, *l. c.* p. 395, on the sugar-cane, Mauritius.

Aleyrodes asarumis, sp. n., Shimer, Trans. Amer. Ent. Soc. i. p. 281, Illinois.

Coccidæ.

Signoret publishes (Ann. Soc. Ent. Fr. 4e sér. viii. pp. 503–528 and 829–876) a memoir upon the insects of this family, with a list of the described species. The first portion is entirely devoted to a discussion of the literature of the family; in the second we have (*l. c.* pp. 830–840) a detailed account of the structure and mode of life of these insects, in illustration of which several species are figured with details on plate 11. The Catalogue is arranged in the alphabetical order of the specific names, with cross references for those which are regarded by the author as synonyms, and the indications of the genera to which they belong. This Catalogue appears to be the result of a most careful investigation, and will prove of great service in the investigation of this difficult group. A table of the characters of the genera would have added greatly to its usefulness.

Boisduval (Ent. Hortic. pp. 300–358) publishes a long account, illustrated with numerous figures, of the principal forms of this family which infest cultivated plants and trees. Several species are imperfectly described as new, and others indicated without characters. The latter are *Chermes kennedyæ* (p. 326) and *C. angræci* (p. 337).

Guérin-Méneville notices (Rev. et Mag. de Zool. 1868, pp. 123-127) the insects which infest the sugar-canes in the Mauritius and Réunion, and expresses his opinion that parasitic insects are to be regarded rather as concomitants than as the cause of a diseased state of the plants. The insects confounded under the name of "Pou à poche blanche" are said by Guérin to be *Coccus sacchari* (Guér.), *Gasteralphes iceryi* (Sign.), *Lecanium guerinii* (Sign.), and *Aleurodes bergii* (Sign.).

Aspidiotus linearis. Shimer (Trans. Amer. Ent. Soc. i. pp. 283–285) describes the natural history of the female of this species, for which he adopts Gmelin's name of *conchiformis*. He indicates the occurrence of a species of *Acarus* (?) which feeds upon the eggs of the insect. Shimer notices in the

young insect the presence of "digituli," or organs like those described by him in his genus *Dactylosphæra* (see 'Record,' 1867, p. 483), which he here seems inclined to place with the Coccidæ (or Monomera). He states that the tarsi consist of one joint with no claw, that the articulation of the body is distinct throughout life, and that the female dwells beneath a scale of her own construction; and upon these characters he proposes to establish for the insect a new genus, *Lepidosaphes*, and a new family, *Lepidosaphidæ*.

Aspidiotus conchiformis. On the habits of this species, see Riley, Pract. Entom. ii. pp. 81, 82.

Chermes ficus (Linn.). Frauenfeld discusses (Verh. zool.-bot. Ges. in Wien, xviii. pp. 896, 897) the generic name to be given to this species, and indicates that *Homotoma* (Guér.) is earlier by two years than Förster's *Anisostropha*.

Lacerda publishes (Bull. Soc. Ent. Fr. 1868, pp. lxxxvii–lxxxix) a note on *Coccus psidii*, which belongs, according to Signoret, to the genus *Ceroplastes*.

Pemphigus vitifoliæ (Fitch). On this species see Shimer, Pract. Entom. ii. pp. 17–20.

Lepidosaphes, g. n., Shimer, Trans. Amer. Ent. Soc. i. p. 373 (*vide suprà*). Sp. *Aspidiotus linearis* (*conchiformis*, Gmel.).

New species:—

Aspidiotus zonatus, Frauenfeld, Verh. zool.-bot. Ges. in Wien, xviii. p. 888, on *Quercus montana*, in the Vienna Botanic Garden.

Chermes cycadis, Boisduval, Ent. Hortic. p. 323, on Cycads in hothouses; *C. dionis*, Boisd. *l. c.* p. 327, on *Dion edule* in hothouses; *C. aloes*, Boisd. *l. c.* p. 327, fig. 42 (p. 328), on Agaves and Aloes; *C. anthurii*, Boisd. *l. c.* p. 328, fig. 43 (p. 329), on the leaves of *Anthurium* and *Caladium*; *C. fulchroniæ*, Boisd. *l. c.* p. 330, on *Fulchronia senegalensis* and *Elais guineensis*; *C. ericæ*, Boisd. *l. c.* p. 330, on cultivated heaths; *C. punctiformis*, Boisd. ibid., on cultivated Orchideæ and Ferns; *C. camelliæ*, Boisd. *l. c.* p. 334, on *Camellia* and *Thea*; *C. filicum*, Boisd. *l. c.* p. 335, on Ferns in hothouses; *C. hibernaculorum*, Boisd. *l. c.* p. 337, on various plants in hothouses; *C. aurantii*, Boisd. *l. c.* p. 338, on oranges in Algeria; *C. cycadicola*, Boisd. *l. c.* p. 345, fig. 46 (p. 344), on *Cycas revoluta*.

Coccus mamillariæ, Boisduval, *l. c.* p. 353, on *Mamillaria*; *C.? lataniæ*, Boisd. *l. c.* p. 355, figs. 49 & 50, on *Latania*.

MOLLUSCA

BY

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REVIEW OF PUBLICATIONS.

A. *Works in progress.*

BOURGUIGNAT, J. R. Mollusques nouveaux, litigieux ou peu connus. Fascicles 9 and 10: 1868 (Sept. 1 and Dec. 1), pp. 259–324, pls. 39–45.

This is the conclusion of the first century and volume. Part 9 is also published in Rev. et Mag. Zool. xx. pp. 269–384, 422–433, and pls. 14–16.

KÜSTER, H. C. Grosses Conchylienwerk von Martini und Chemnitz. Neue reich vermehrte Ausgabe, in Verbindung mit Prof. Philippi, Dr. Pfeiffer, Dr. Dunker u. A. herausgegeben von. Nürnberg, 4to.

[The great conchological work of M. and Ch. New and much enlarged edition, in conjunction with Philippi, Pfeiffer, Dunker, and others, edited by ——.]

Sect. 55, containing the genera *Argonauta, Nautilus, Spirula,* pp. 15, pls. 6; *Umbrella* and *Tylodina,* pp. 5, pl. 1 (dated 1862); *Ianthina* and *Recluzia,* pp. 12, pls. 2; *Ricinula,* pp. 34, pls. 5 (dated 1862); *Tridacna* and *Hippopus,* pp. 8, pls. 3.

The parts of this section have been published together. It is a continuation of the Continuation of Martini's and Chemnitz's Conchylien-Cabinet. The highly esteemed monographs of genera of terrestrial shells by Dr. Pfeiffer, and of *Ampullaria* and *Trochidæ* by Philippi, are portions of this work. The part now published has been prepared by Dr. Küster, who was working under the disadvantages of distance from a large collection and library. The works accessible to the author are used and quoted conscientiously. The old plates (which are in possession of the publisher) contrast strongly with the new, the latter being fortunately much more numerous and well executed.

PALADILHE, M. Nouvelles Miscellanées malacologiques. iii. fascicule. Monographie du genre *Acme.* pp. 63–100, pl. 4.

Paris, 1868, gr. 8vo. Also published in Rev. et Mag. Zool. xx. pp. 225–239, 273–283, 321–330, pl. 13.

Pfeiffer, L. Monographia Heliceorum viventium. Vols. v. and vi. Cassel, 1868, 8vo, pp. 565 and 598.

Pfeiffer, L., et Dunker, W. Novitates Conchologicæ. Cassel. 4to. Sect. I. Land-Conchylien, by Pfeiffer. Parts 29–32, belonging to vol. iii. pp. 369–430, and pls. 87–96. [*Helix, Macroceramus, Bulimus.*] Sect. II. Meeres-Conchylien, by Dunker. Part 13, pp. 107–120, pls. 37–39. [*Arcidæ* and *Solenidæ.*]

Reeve, L. Conchologia Iconica, continued by Sowerby. Parts 261–275, containing the continuation of the genera *Unio, Anodonta, Tellina,* and *Mycetopus, Iridina, Galatea,* and *Bullidæ.*

Römer, E. Monographie der Molluskengattung Venus. Parts 12–15, pp. 128–172, pls. 36–45.

Weinkauff, H. C. Die Conchylien des Mittelmeers. Band ii. Mollusca cephala. Cassel, 1868, pp. 512. (Concluded.)

B. *Conchological Journals.*

We have given the full titles in Zool. Record, iv. p. 486. The Journal de Conchyliologie, edited by H. Crosse and P. Fischer, Paris, 8vo (Journ. Conch.), vol. xvi. contains 406 pages and 14 coloured plates. The Malakozoologische Blätter, edited by L. Pfeiffer, Cassel, 8vo (Mal. Blätt.), vol. xv. 226 pages and 5 plates. The American Journal of Conchology, edited by W. Tryon, Philadelphia, 8vo (Am. Journ. Conch.), vol. iv. 304 and 77 pages and 20 plates, part of which are coloured. The Annales de la Société Malacologique de Belgique were not issued at the close of this Record (July 1869); but we are informed by the editor, M. Colbeau, that the volume for 1868 will be published in a short time. A new Conchological Journal has been started in Italy, viz.—

Bullettino Malacologico Italiano. Vol. i. 1868. Molluschi terrestri e d' acqua dolce. Pisa, 1868, 8vo, pp. 100, pls. 6. Edited by Dr. Camillo Gentiluomo.

Towards the end of the year 1868 a German Malacological Society constituted itself at Frankfort-on-the-Main, which publishes a new journal, 'Nachrichtsblatt der deutschen Malakozoologischen Gesellschaft,' edited by D. F. Heynemann and W. Kobelt. Nos. 1 and 2 were issued in December 1868, and contain papers concerning the constitution of the society; the following numbers will be mentioned in future.

C. *Separate Publications.*

Bourguignat, J. R. Souvenirs d'une exploration scientifique dans le Nord de l'Afrique. III. Histoire malacologique de la Régence de Tunis. Paris, 1868, 4to, pp. 36, with a plate.

Brot, A. Matériaux à l'étude de la famille des Mélaniens. Additions et corrections au catalogue systématique de la famille des Mélaniens. Genève, 1868, 8vo, pp. 64, with 3 coloured plates.

Cox, J. C. A monograph of Australian Land-Shells, illustrated with 18 (coloured) plates. Sydney, 1868, 8vo, pp. 110.

(Guérin-Méneville.) Les Mollusques décrits et figurés d'après la classification de G. Cuvier mise au courant des progrès de la science. 36 planches représentant en 520 figures dessinées d'après nature et gravées sur cuivre les espèces les plus remarquables avec un texte descriptif. Paris, 8vo.

A collection of well-executed plates, representing the principal genera of mollusks, shells as well as living animals, the latter being copied from well-known original works, such as those of Quoy and Gaimard, Rang, &c. There is no descriptive text, only an explanation of the figures; and it can hardly be said that the work is brought to the present state of science, as there is no trace of a hectocotylized arm of Cephalopods, of a jaw or radula of Gastropods, and more recent investigations on *Dentalium* and *Brachiopoda* are entirely ignored.

Haines, W. A. Catalogue of the Terrestrial Shells in the collection of the author. New York, 1868, 8vo, pp. 119.

An enumeration of about 3000 species.

Lindström, G. Om Gotlands nutida Mollusker. [On the recent Mollusks of the island of Gotland, published as Programme for a school at Wisby.] 1868, 8vo, pp. 48, with 3 plates.

(Mitchell, F.) Catalogue of the Mollusca in the collection of the Government Central Museum, Madras. 1867, 8vo, pp. 79.

Moitessier, P. A. Histoire malacologique du département de l'Hérault, 1868, gr. 8vo, pp. 111, with 1 plate.

Morelet, A. Mollusques terrestres et fluviatiles. A separate part of Friedr. Welwitsch's 'Voyage exécuté par ordre du gouvernement Portugais dans les royaumes d'Angola et de Benguela.' Paris, 1868, gr. 8vo.

The malacological part contains 102 pages and 9 plates. In the Journ. Conch. xvi. p. 144, the author states that this part

of the work was printed as early as September 1867, but published in 1868, adding some corrections to the figures, which will be noticed in the special part.

Reeve, Lovell. The Edible Mollusks of Great Britain and Ireland, with Recipes for cooking them. London (Reeve), 8vo, pp. 210.
Not seen by the Recorder.

Saint-Simon, A. de. Nouvelles observations sur les *Pomatias* du midi de la France. Toulouse, 1868, 8vo, pp. 15.
Only 50 copies were printed. Abstract in Journ. Conch. xvi. pp. 386–387.

Schmidt, A. System der europäischen Clausilien, und ihrer nächsten Verwandten. Cassel, 1868, 8vo, pp. 176, with a table representing the complicate affinities of the several sections.

Sturz, J. J. Austernbetrieb in Amerika, Frankreich und England mit Hinblick auf die deutschen Nordseeküsten. [On the culture and commerce of Oysters in [North] America, France, and England, with regard to the German coasts of the North Sea.] Berlin, 1868, 8vo, pp. 48.

Woodward, S. T. A Manual of the Mollusca. Third edition. London, 1867, 12mo.

D. *Conchological Papers published in Journals.*

Adams, A. On the species of Helicidæ found in Japan. Ann. & Mag. Nat. Hist. 1868, i. pp. 459-472.

——. On the species of *Cæcidæ, Corbulidæ, Volutidæ, Cancellariidæ,* and *Patellidæ* found in Japan. Ibid. ii. pp. 363–370.

Adams, H. Further descriptions of new species of Shells collected at Mauritius by Geoffrey Nevill, Esq. Proc. Zool. Soc. 1868, pp. 12–14, with part of plate 4.

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——. Descriptions of some new species of Shells collected by Geoffrey Nevill, Esq., at Mauritius, the Isle of Bourbon, and the Seychelles. Ibid. pp. 288-292, with part of plate 28.

——. Descriptions of some new species of Shells, chiefly from Ceylon. Ibid. pp. 292–294, with part of plate 28.

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Khasi Hills, and Burmah, &c. Journ. As. Soc. ii. p. 83, pls. 1–4.

Baudon, A. Description d'un Limacien de France nouveau. Journ. Conch. xvi. pp. 142–144.

Betta, E. de. Molluschi terrestri e fluviali dell' Anaunia nel Trentino. Commentario della Fauna, Flora e Gea del Veneto, No. 4. Venezia, Aprile 1868; also as separate publication, pp. 13, 8vo.

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Manzoni, A. Nouvelles espèces de *Rissoa*, recueillies aux îles Canaries et à Madère. Journ. Conch. xvi. pp. 164–168.

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Marrat, F. P. Observations on some proposed new species of *Oliva*. Ann. & Mag. Nat. Hist. 1868, i. pp. 472–475. (A reply by Graham Ponton, ii. p. 76.)

——. On *Oliva auricularia* (Lam.), *aquatilis* (Reeve), and *auricularia* (D'Orb.). Ibid. ii. pp. 167, 168.

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A list of 39 pelagic species, collected by Capt. Whiteway during several voyages from Liverpool to Valparaiso, without indication of localities.

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——. Ueber einige Heliceen vom Himalaya. Ibid. pp. 157–162.

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——. Ueber einige Landschnecken aus den Karpathen. Sitzungsberichte der Gesellschaft naturf. Freunde in Berlin, 1868, p. 31.

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The General Subject.

Anatomy and Physiology.

The chief object of Boll's histological researches, made during a stay of two months at Nice, under the eyes of Prof. Max Schultze, into Cephalopods, Heteropods, Chiton, and some Opisthobranchs, and supplemented by observations on land mollusks, has been to determine how far the elementary structure of mollusks is really identical (homologous) with that of

Vertebrates, and which parts may be called only analogous, serving the same purposes, without being truly identical in elementary texture and morphological structure. He comes to the conclusion that the four principal classes of histological elements (the conjunctive or cellular tissues, the muscular, the nervous, and the epithelial) are really the same in both types of the animal kingdom,—further, that even several more specialized elements are also homologous, as, for example, the intercellular substance, the network of anastomosing cells (the cartilages being a cellular mass solidified by interposed membranes), the endothelial bordering membranes (as sarcolemma and neurolemma), the uncoloured corpuscles of the blood, the ganglion-cells and nervous fibres and their junctions, the epithelial spines, the vibratile cilia, the cylindrical epithelium (as chief resorbent element on the inner surface of the intestinal tract), the combination of nervous and epithelial elements in the organs of sense—further, the organs for secretion of uric acid and bile, the generative glands, zoosperms, and ovules. Even the branchial organs (gills) are said to be homologous in mollusks and vertebrates, their structure and situation in *Amphioxus* and in Tunicates being remarkably similar. With regard to the heart and blood-vessels, the author feels not certain enough to decide whether they are homologous or merely analogous. The areolar or adenoid texture, a modification of the common cellular texture, has, in mollusks, at present, been found in the orbital mass of Cephalopods only. The author considers the *Salpæ* to be the most simple and original forms of mollusks, whilst the Bryozoa are much modified by their sessile life and composition of several individuals.

The existence of capillary vessels, with distinct walls, in the vascular system of the Gastropoda is demonstrated by injections of coloured fluid into the heart or the larger veins, especially in *Helix pomatia* (L.) and *Murex brandaris* (L.), by C. Wedl, Sitzgsber. Ak. Wiss. Wien, 1868, lviii. pp. 179–201, with three plates.

Contributions to Faunas.

a. *Land- and Freshwater Mollusca.*

1. *Northern and Central Europe.*

The *Northern* species believed by various authors to be common to North America and Europe [circumpolar] have been enumerated and examined by Dr. Mörch, Am. Journ. Conch. iv. p. 27: there are 10 species, but only in 1, *Zoogenetes harpa* (Say), the author admits a specific identity. With regard to *Z. pulchella* (Müll.)=? *minuta* (Say) and *hammonis* (Ström)=? *electrina* (Gould), he concludes, from the researches of Mr. Morse, that their identity is improbable, and with regard to the species of *Conulus*, *Vitrina*, and *Succinea*, that it is very doubtful. [It is strange that he does not even mention the relation of *Cionella lubrica* (Müll.) to its American representative.]

Spitzbergen. "According to the careful researches of Prof. Torell, there are no land- and freshwater shells found in Spitzbergen." Mörch, Am. Journ. Conch. iv. p. 45.

Greenland. The land- and freshwater mollusks of this country are enumerated by Dr. Mörch, Am. Journ. Conch. iv. pp. 25–40. There are 1 *Vitrina*, 1 *Hyalina*, 1 *Conulus*, 1 *Pupa*, 1 *Succinea*, 1 *Planorbis*, 2 *Limnæus* (one of them with several varieties), and 1 *Pisidium*, altogether 9 species; seven others are judiciously rejected. Six out of the nine are considered to be species peculiar to Greenland; but all are nearly allied to European and North American; the *Succinea* is common with Iceland, the *Planorbis* with Siberia; and *Hyalina alliaria* (Miller) is a well-known British and German shell. All these Arctic species are small, yet they are the largest species of the group to which they belong. The land-shells of Greenland are nearly allied to species occurring in Iceland, especially the *Vitrina*. *Succinea* and *Hyalina alliaria* agree better with the Iceland species than with American; but the freshwater species are entirely different from those of Iceland, approaching the American type. [May we not be justified by this fact in supposing that those land-shells were introduced from Europe?]

Iceland. The land- and freshwater mollusks of this island are also enumerated by Dr. Mörch, Am. Journ. Conch. iv. pp. 41–45. There are 21 species (12 terrestrial and 9 freshwater), besides 5 the occurrence of which in Iceland is doubtful; almost all are well-known European and especially British species; only *Succinea grœnlandica* (Beck) is not yet recognized as British, or as living on the continent of Europe. The *Vitrina* and a *Pupa* could not be specifically determined. The occurrence of some species of larger size, as *Arion ater* (L.), *Helix arbustorum* (L.), and *hortensis* (Müll.), distinguishes the Icelandic fauna at the first glance from that of Greenland.

Shetland Islands. Two species of freshwater Conchifera, 5 of freshwater Gastropods, and 16 terrestrial species are enumerated by Jeffreys, Ann. & Mag. Nat. Hist. ii. p. 314.

England. In the neighbourhood of Bristol there have been found 6 slugs, 28 land-shells (with some varieties), 6 freshwater univalves, and 1 bivalve. *Testacella maugei* occurs in a nursery. *Helix cantiana* formerly very plentiful in a hedge by the river Avon but now destroyed by a railway. White or whitish varieties of *Helix rufescens*, *concinna*, and *rotundata* are mentioned. C. E. Jellie, in Naturalist and Field-Club Journal, 1867, pp. 148, 149.

The island of *Gotland*, in the Baltic, is inhabited by 75 species of land- and freshwater mollusks. *Limnæa auricularia*, *Paludina vivipara* (Müll.), and *Amphipeplea glutinosa*, which live on the neighbouring coast of Sweden, are not found here or on the island Öland, which is still nearer to the coast. Lindström, Gotlands nutida Mollusker, 1868.

Russia. The title of a paper on the Gastropods collected near Moscow by Nadejin, has been given above (p. 428).

Northern Germany. *Buliminus tridens* (Müll.), *Helix striata* (Müll.), *Vitrina diaphana* (Drap.), and *Pupa costulata* (Nilss.) found at Frankfurt-on-the-Oder; *Hyalina subterranea* (Bourg. as *Zonites*) in the provinces Pomerania, Brandenburg, Silesia, &c.; and *Pupa arctica* (Wallenberg) received from the "kleine Schneegrube" in Silesia. Reinhardt, Sitz. Ber. Gesellsch. naturf. Freunde Berlin, 1868, pp. 10 and 31.—*Cyclas solida* (Normand) in the Elbe near Hamburg, Martens, ibid. p. 31.

Reuss (Principality in Thuringia). 56 species of terrestrial and only 25 of freshwater Mollusca are enumerated by Liebe and Zimmer, Jahresber. Gesellsch. Fr. Naturwiss. Gera, 1866, pp. 34, 35. *Helix bidentata* (Gmel.) is rare, and probably near its extinction; *H. candidula* (Stud.) and *striata* (Müll.) are absent, because there is no limestone; *H. nemoralis* (L.) more common in the upper parts of the country than in the lower, *hortensis* (Müll.) common everywhere; no *Bulimus radiatus* [*detritus*, Müll.]. *Balea fragilis* (Drap.) on schistaceous rocks. Seven species of *Clausilia*, the most interesting being *Cl. filograna* (Ziegl.), the most plentiful *Cl. biplicata* (Mont.). *Limnæus peregeer* (Dr.) and *minutus* (Dr.) common; *Planorbis corneus*, *Physa hypnorum*, *Paludina*, and *Neritina* are absent.

Frankfort-on-the-Main. F. D. Heynemann has given an account of the malacological fauna of its neighbourhood, the Taunus included, adding numerous general remarks on the geographical distribution of the species mentioned; 15 freshwater bivalves, 26 freshwater gastropods, and 69 terrestrial species are enumerated. The following may be mentioned:—*Cyrena solida* (Normand), *Planorbis rossmässleri* (Auerswald), *Limax cinctus* (Müll.), *Vitrina draparnaldi* (Cuv.), *Bulimnus detritus* and *tridens* (Müll.), *Balea fragilis* (Dr.), *Pupa doliolum* (Dr.), and *Vertigo moulinsiana* (Shuttl.); of *Clausiliæ*, *biplicata* (Mont.) and *nigricans* (Pult.) are the most common; some others, as also several species of *Helix* and *Bulimnus*, are only met with on old ruins in the Taunus, especially those of Hattstein and Falkenstein. Neunter Bericht d. Offenb. Vereins f. Naturkunde, pp. 39–60.

Carpathian Mountains. Some mollusks from the *Tatra* and from the plains of *Podolia* are mentioned by Prof. Nowicki and M. Wierzejski (*l. c.*). On the Tatra there are found *Limax schwabii* (Frauenf.), *Helix rudevata*, *faustina*, *holosericea*, *Bulimus montanus*, *Clausilia granatina*, *nigricans*, *elata* var. *turgida* (Ziegl.), ? *cruda* (Ziegl.), and *Limnæa peregra*. Of the Podolian species we may mention *Helix strigella*, *bidentata*, *instabilis*, *Pupa tridens*, *Melanopsis lembergensis* (Schröt.), *esperi* (Fér.), and *Lithoglyphus fuscus* (Ziegl.).—*Helix faustina* (Ziegl.), *cingulella* (Ziegl.), and *Pupa gularis* var. *spoliata* (Rossm.) were found in the Carpathian Mountains by Dr. Jachno. Martens, Sitz. Ber. Gesellsch. naturf. Freunde, Berlin, 1868, p. 31.

2. *Mediterranean Province.*

P. A. Moitessier's 'Histoire malacologique du département de l'Hérault' has been published as a separate work, containing, besides the list of species and their localities, pp. 11–81 (which was published in the previous year in 'Revue et Magasin de Zoologie,' see 'Record,' vol. iv. p. 503), some interesting introductory remarks on the malacological literature of this department, the home and working-place of the celebrated Draparnaud, and a treatise on sinistral shells, pp. 83–94. This monstrosity is said to be rarer near Montpellier than elsewhere. Of the 213 species enumerated, there are 129 terrestrial, 83 belong to freshwater, and one, *Alexia*, inhabits brackish water; it is characteristic of South-western Europe that only 5 species of *Clausilia*, but 14 of *Pupa* (*Vertigo* excluded) occur. Among the fresh-

water shells we find the genera *Moitessieria* (Bourg.) with 3, *Paladilhia* (Bourg.) with 6, and *Bugesia* (Paladilhe) with 1 species. Several new species are described and figured, which we mentioned in the preceding year. M. Bourguignat, who has acted as editor of the work since the death of the author, has added a "malacological stratography" of the department, classing the species in several divisions according to the centres of distribution from which they are considered to have taken their origin. Thus 110 species are referred to the "Alpine" centre, 12 to the "Old Gallic" (*Moitessieria, Bugesia, Paladilhia,* 2 species of *Hydrobia*), whereas the remainder are either referred to more remote centres, as the "Tauric" or "Asiatic," or are so widely spread over the earth's surface that their origin cannot be traced.

Some new species of *Helix* from Southern France and Spain, by Rambur, in Journ. Conch. xvi. pp. 265–268.

Tirol. The conchological fauna of *Val di Non,* in Southern Tirol, has been examined by E. de Betta (*l. c.*); he enumerates 87 species, the great majority of which (79) are terrestrial. Of freshwater species there are only mentioned 3 species of *Limnæa,* 2 of *Bythinia* [rather one true *Bithynia,* viz. *tentaculata* (L.), and an *Hydrobia, schmidtii,* Charp.], 1 *Valvata,* 1 *Anodonta,* and 1 *Pisidium.* Although we think that this number may be increased in future, for example, by some *Planorbis,* yet the relatively small number of freshwater shells is highly characteristic of mountainous countries. Among the terrestrial, the following deserve to be mentioned here:—*Vitrina brevis* (Fér.), *Helix aculeata* (Müll.), *angigyra* (Ziegl.), *lurida* (Ziegl.), *ciliata* (Venetz), *unifasciata* (Poiret) = *candidula* (Stud.), *æmula* (Rossm.), *Bulimus detritus* (Müll.), *quadridens* (Müll.), *Cionella jani* (Betta), *Clausilia comensis* (Shuttl.), *stentzii* (Rossm.), *albo-guttulata* (Wagn.), *Pupa biplicata* (Mich.), *pagodula* (Desmont), *dilucida* (Ziegl.), *triplicata* (Stud.).

Tuscany. The land- and freshwater mollusks of this country are enumerated by Dr. O. Gentiluomo; 158 species, viz. 109 land, 47 freshwater, and 2 submarine species (Bullett. Malacol. Ital. i. pp. 67–98). Among them are three species of *Testacella,* one being new, 16 species of *Zonites* (all except one belonging to *Hyalina*), 39 species of *Helix,* 10 of *Clausilia,* among which *Cl. plicatula* (Drap.), rare in Italy, 10 of *Pupa,* 5 of *Vertigo,* 7 of *Bythinia.*—The report on A. Issel's malacology of the Province of Pisa, given by the Recorder in Mal. Blätt. 1867, is published in the Italian language, with the addition of several original observations by Gentiluomo. Bull. Malacol. Ital. i. pp. 11–15.

The Thermal Springs of S. Giuliano, near Pisa, are inhabited by *Bithynia thermalis* (L.), *tentaculata* (L.), and *Neritina fluviatilis* (L.). Gentiluomo, Bullett. Malacol. Ital. i. pp. 31, 32.

Abruzzi. Thirty-two terrestrial and 6 freshwater species, found by several naturalists, especially Orsini and Huet, in or near the mountains of the Abruzzi, in Central Italy, and in the neighbourhood of Ascoli, are enumerated by Ed. v. Martens, Mal. Blätt. xv. pp. 72–82.

Several species from Italy, supposed to be new, described by J. Mabille. Revue et Mag. Zool. xx. pp. 12–25.

Malta. The land- and freshwater mollusks of this island and the neighbouring island of Gozo are enumerated by A. Issel: 44 species, 33 terrestrial, 9 aquatic, and 2 submarine (*Alexia*); 30 of them it has in common with Sicily, 3 with other parts of the shores of the Mediterranean; 7 are peculiar, viz. *Helix melitensis* (Fér.), *spratti* (Pfr.), *schembrii* (Schwerzenbach), *calcarata* (Benoit), *Clausilia delicatæ* (Gulia), *mamotica* (Gulia), and *Cyclostoma melitense* (Sow.). The land-snails are generally of small size, and have a solid shell with well-developed sculpture. There are no exclusively African forms, if we do not regard *Melania tuberculata* (Müll.) as African, it being rather Indian, and probably introduced by the agency of aquatic birds; at all events it is the first instance of its being found in Europe. Also, of the numerous species of land-shells peculiar to Sicily, only three or four have been found in Malta. This island was probably larger in former times, but its present fauna does not favour the idea of its having been connected in later geological times either with Sicily or, still less, with Africa. Bullett. Malacol. Ital. i. pp. 1–6, 17–24.

Island of Rhodes. Some shells found in this island are mentioned by Jos. Erber, Verhandl. zool.-bot. Gesellsch. 1868, p. 904. They are *Helix meridionalis* (Parr.), *ocellata* (Parr.), *pisana*, *redtenbacheri* (Zeleb.), *Bulimus fusconiger* (Parr.), *turgidus* (Parr.), *Pupa lindermeyeri* (Parr.), *Clausilia olivieri* (Roth), *Melanopsis lucio* (Mouss.), and a *Helix*, said to be new, but not described.

The *Algerian* species of the genus *Pomatias* are enumerated by Bourguignat, Moll. nouv. litig. ou peu connus, part ix. pp. 290–292.

Tunis. J. R. Bourguignat has published an account of its molluscan fauna, chiefly from personal observations made during some excursions to the vicinity of the town. At present 61 species are known from this regency, viz. 53 terrestrial and 8 freshwater species. Only 10 are not known to occur in Algeria, and peculiar to Tunis, most of them being new (though closely allied to Algerian species), viz. 6 of *Helix*, 2 of *Clausilia*, 1 *Limnæa*, and 1 *Hydrobia*.

The following South-European species occur also in Tunis:—*Milax gagates* (Drap.), *Zonites candidissimus* (Drap.), *Helix aperta* (Born), *melanostoma* (Drap.), *aspersa* (Müll.), *vermiculata* (Müll.), *conspurcata* (Drap.), *lenticula* (Fér.), *rufolabris* (Benoit), *lineata* (Olivi) [=*maritima* (Drap.)], *variabilis* (Drap.), *cretica* (Fér.), *pisana* (Müll.), *cespitum* (Drap.), *pyramidata* (Drap.), *terrestris* (Chemn.), *acuta* (Müll.), *Bulimus decollatus* (L.), *pupa* (L.), *Clausilia bidens* (L.) [=*papillaris* (Müll.)], *Pupa granum* (Drap.), *Cyclostoma sulcatum* (Drap.), *Melania tuberculata* (Moll.), *Melanopsis maroccana* (Chemn.), *Helix rupestris* (Drap.). *Pupa umbilicata* (Drap.) and *Limnæa truncatula* (Müll.) are the only species common to the central or northern parts of Europe. *Ferussacia carnea* (Risso) lives in the ruins of Carthage and Utica; but the occurrence of this species in Europe is very doubtful.

Syria and *Palestine.* The species of *Clausilia* occurring in these countries are enumerated by M. Bourgignat, Moll. nouv. litig. part ix. pp. 277–289; some other shells from the same countries, ibid. part x. pp. 311 and 315.

3. *Eastern Asia.*

Japan. Mr. A. Adams enumerates 63 species of *Helicidæ*, Ann. & Mag. Nat. Hist. i. pp. 459–472, 34 of them being described as new. The European *Hyalina nitida*, the North-American *H. electrina* and *Helix minuscula* have

been recognized as occurring also in Japan. *Balea varieyata* (sp. n.) is quite a peculiar form. The paper terminates with 8 new species of *Clausilia*. The author promises to treat of *Pupa* and the operculated land-shells in another paper.

4. *Africa.*

Western Africa. A. Morelet's work on the land- and fresh-water mollusks collected by Dr. Friedr. Welwitsch in Angola and Benguela (see p. 421) is a valuable contribution to our knowledge of African malacology. The author gives in the introduction an account of the travels of Dr. Welwitsch, and of the physical features of the country, distinguishing three regions, viz. the littoral, the mountainous, and that of the higher plains, and mentioning the more characteristic of each: 54 species of land-shells and 30 living in fresh water are enumerated, and most of them described and figured. As in the African fauna generally, the *Helices* are few in number, and, with the exception of those which may be supposed to belong to *Nanina*, of small size. The predominant genus among the land-shells is *Achatina*; a new large species *A. monetaria*, together with some other species, is used by the natives for ornaments and as money. The genera *Streptaxis*, *Bulimus* [group *Rhachis*], *Pupa*, and *Ennea* are represented each by a few species. Among the fresh-water shells we find the genus *Planorbis* with two species similar to European, *Limnæa* with four allied to those from British India, of *Physa* several with plaited sculpture [group *Isidora*] and others turreted [*Aplexa*], one *Physopsis*, one *Ampullaria*, and one *Paludina*, identical with the species of the Nile, *Lanistes* identical with a species from Mossambique, two *Neritina*, *Unio*, and *Iridina* [*Spatha*] (the species identical with those from the Nile), *Galatea*, and *Ætheria*. The author thinks also that several species of land-shells, *Limicolaria*, are identical with those in the upper territory of the Nile and Western Africa, and finally gives a list of all African land- and freshwater mollusks known to him.

Island of St. Thomas. H. Crosse enumerates the land-shells, Journ. Conch. xvi. pp. 125–135.

Mauritius, *Bourbon*, and *Seychelle Islands.* Several new species are described by H. Adams, Proc. Zool. Soc. 1868, pp. 12–14, and 288–292; living specimens of known species by G. Nevill, ibid. pp. 257–261.

5. *India.*

W. T. Blanford has published several papers on Indian land- and fresh-water shells, treating chiefly of the genus *Diplommatina*, a new subdivision of which is characteristic of the southern part of the peninsula, and of the genus *Cyathopoma*, Journ. As. Soc. ii. pp. 79–83; Journ. Conch. xiv. pp. 256–263 and 330–336. *Fairbankia* is a new genus of Rissoidæ peculiar to the brackish water of Western India. Ann. & Mag. Nat. Hist. ii. p. 399.

Some *Himalayan* snails are described by E. v. Martens, Mal. Blätt. xiv pp. 157–162, and three from the *Philippines* by the same, ibid. pp. 162–165.

6. *Australia and Polynesia.*

The monograph of Australian land-shells, published by James C. Cox in Sydney, contains descriptions of all and coloured figures of almost all known species, 262 in number. Many of the figures are original; others, not in the possession of the author, are copied from the best European works. The known localities and the names of the observers are conscientiously recorded. 172 species belong to the genus *Helix* in its wider sense (including *Hyalina*, *Patula*, &c.), and are distributed by the author in 29 sections, many of which are characteristic of this part of the world; for instance, *Panda*, called *Helicophanta* by the author, *Pedinogyra* (*Macrocyclis* of the same), and those which have for types *H. pomum* (Pfr.), *grayi* (Fér.), and *bipartita* (Fér.), mostly consisting of large richly coloured species. The genus *Bulimus* in its wider sense contains only 19 Australian species, most of them belonging to the sections *Liparus* and *Caryodes* (Alb.). *Vitrina* is well represented by 15 species [some at least may belong to *Helicarion*], *Pupa* only by 7 of small size. Of operculated land-shells there are only 35 species, most of them belonging to the genera *Truncatella*, *Diplommatina*, *Pupina*, and *Helicina*. *Cyclophorus* is represented by two species only of small size, *Leptopoma* by one limited to the north-east coast; *Cyclotus* is absent. *Helix brevipila* (Pfr.) extends from South Australia and Victoria to New South Wales and Queensland, to Cape York and the islands in Torres Straits; but this is an exception: by far the great majority of species occur, or at least have hitherto been found, only on one of the coasts of that continent; it may have a few in common with other parts of the globe, one or two perhaps with New Zealand; and, finally, the widely diffused *Helix similaris* (Fér.) occurs also in some Australian localities, but is probably imported.

New land-shells from *New Caledonia* are described by Crosse, Journ. Conch. xvi. pp. 91–97 and 145–164.

7. *Tropical America.*

Trinidad, *Dominica*, and *Grenada*. The land-shells of these islands have been examined by Mr. Lechmere Guppy, Ann. & Mag. Nat. Hist. i. pp. 438–441, and Proc. Sc. Assoc. Trinid. 1868, pp. 237–245; those of the two latter islands are treated of for the first time. Also Mr. Th. Bland has published a paper on the same subject (making use of Mr. Guppy's researches) in Am. Journ. Conchyl. iv. pp. 177–192, and added several species from *Curaçao* and *Buen Ayre*. The number of

land- and freshwater shells is rather small; and few only are common to several islands, as *Stenogyra plicatella* (Guppy). In Dominica principally, but probably also in the other islands, the greater part of the species are confined to the moist wooded inland mountains, where, for example, *Amphibulima pardalina* (Guppy) lives "buried in the very thick moss of the trees in the high regions of the forests where the vegetation is always dripping with moisture." The lists comprise 37 species from Trinidad, 19 from Dominica, 14 from Grenada, 4 from Curaçao, and 2 from Buen Ayre.

Southern Brazil. A collection of land- and freshwater shells made by Dr. Reinhold Hensel during his stay in the province Rio Grande do Sul, and deposited in the Zoological Museum of Berlin, contained not only several new species, but was also accompanied by notes on the occurrence of these and other known species. This province had never before been conchologically explored; and therefore the collection has been made the subject of a separate paper by E. v. Martens in the Mal. Blätt. xv. pp. 169–217 : 23 terrestrial species, 21 freshwater, and 4 brackish water are enumerated, the new ones described, and notes concerning the variations, affinities, and geographical distribution of other species are added. It may be mentioned that the collection contained a new species of *Pellicula*, a subgenus hitherto believed to be restricted to the West Indies, a new, rather large species of *Helix* allied to Bolivian and Peruvian forms, the true *Bulimus pudicus* (Müll.), and one *Helicina* (*carinata*, Orb.), the southernmost species of the genus. The greater part of the species are identical with forms from Rio Janeiro and the La Plata. *Melania* and *Limnæa* are not represented. The author has compiled a list of all the species at present known to inhabit the countries from Rio Janeiro to the La Plata, arranging them in three columns according to hydrographical divisions. The introduction contains historical notices. The jaw and lingual teeth of some of these species are described and figured by F. D. Heynemann in the same Journal. pp. 99–113.

P. Strobel gives a few notes on Argentine Mollusca, Atti Soc. Ital. Sci. Nat. xi. 1868, pp. 547–553.

Several species of *Helix* and *Bulimus* from various parts of South America, especially Peru, figured in Pfeiffer's 'Novitates.'

8. *North America.*

Several land- and freshwater shells, collected in Nebraska by F. v. Hayden, are enumerated by Tryon, Am. Journ. Conch. iv. pp. 150, 151; the more remarkable are *Unio nigerrimus* (Lea), *rutersvillensis* (Lea), *mississippiensis* (Conrad), *topekaensis* (Lea), and *pressus* (Lea).

E. Morse continues his paper on the shells of New England in the American Naturalist, No. 11, 1868. (See Zool. Record, iv. p. 510.)

J. Lewis speaks about the species of *Melantho* and other freshwater-shells in the valley of the Mohawk. Am. Journ. Conch. iv. pp. 2–4, 133–136, and 241–245.

b. *Marine Mollusca.*

1. *Seas of Europe.*

The "last" dredging report among the Shetland Isles, by J. Gwyn Jeffreys, contains, besides a few additions to the British fauna, as *Pleurotoma carinata* (Bivona) and *Montacuta donacina* (S. Wood), a list of 75 species common to the North Sea and the Mediterranean: many of them have been described as distinct species; and their identity with northern forms has been made out by the author during a recent visit to Italy. Both faunas are much more different with regard to their littoral species than to those which live in somewhat greater depths. The principal results of the author's observations from his dredging excursions are summed up thus (Ann. & Mag. Nat. Hist. ii. pp. 298–305) :—

1. There are only two principal zones concerning the bathymetrical distribution, the littoral and the submarine.

2. Specimens or varieties of the same species are larger in the littoral and laminarian zones than in deeper water.

3. The size of North-European specimens is usually greater than that of South-European specimens of the same species.

4. The colour of specimens from the greatest depths is not less vivid than of those from shallow water, although each zone has colourless specimens.

5. Mollusca inhabiting deep water have consequently a larger supply of oxygen for the aëration of their gills than those which live in shallow water.

6. The occurrence of the same species in the North Sea and the Mediterranean results partly from former geological or cosmical conditions, and partly from a communication which once existed between the Bay of Biscay and the Gulf of Lyons.

7. Exotic and oceanic shells are carried northwards by westerly winds, and not directly by the Gulf-stream, which does not reach our coasts.

8. Land- and freshwater mollusca are scarce in Shetland, owing to the scantiness of succulent vegetation and of lime; the specimens are also smaller than southern ones.

9. Semifossil shells of Arctic species are met with on the sea-bottom at considerable depths, and at some distance from land: probably the sea-bed was formerly more elevated, these mollusks living in shallow water, and is, perhaps, still sinking.

10. Species recorded from the Coralline Crag and earlier deposits, and supposed to be extinct, have now been discovered living in the Shetland seas.

The statements contained in Nos. 1, 3, 4, and 7 are opposed by R. MacAndrew, from his own observations, in the same journal, pp. 357–362.

Shetland Isles. 359 species of marine mollusks inhabiting

the Shetland Isles and the adjacent seas are enumerated by Gw. Jeffreys, Ann. & Mag. Nat. Hist. ii. pp. 306–314 and p. 387.

Baltic Sea. On the shores of the island of Gotland the following marine species have been found:—*Embletonia pallida* (Möbius), *Pontolimax capitatus* (Müll.), *Paludinella baltica* (Nilss.), *Mytilus edulis* (L.), *Cardium edule* (L.), *Tellina baltica* (L.), and *Mya arenaria* (L.). Lindström, Gotlands nutida mollusker, pp. 31–37. *Cyprina islandica* (L.) and *Astarte intermedia* (Semper) [the Recorder thinks it to be *corrugata* (Brown)] are found in the Baltic, on the shores of Warnemünde, Meklenburg; *Cardium edule*, which is generally very small in the Baltic, attains here to a height of 30 and to a length of 37 millimetres. Wiechmann, Archiv d. Vereins f. Naturgeschichte in Meklenburg, vol. xxii. pp. 125, 126.

Gulf of Gascogne. MM. de Folin, A. Lafonte, and others have dredged between Noirmontiers and St. Jean de Luz, in a depth of 40–80 fathoms. They found a considerable number of marine shells hitherto not known as belonging to the oceanic fauna of France, as *Neæra costellata* (Desh.), *Psammobia costulata* (Turt.), *Lepton nitidum* (Jeffr.), *Leda tenuis* (Phil.), *Arca pectunculoides* (Scacchi), *Lima subauriculata* (Mont.), *Scissurella crispata* (Flem.), *Cyclostrema nitens* (Phil.), *Rissoa soluta* (Forbes), *Eulima bilineata* (Alder), *Mangelia borealis* (Lovén), *elegans* (Scacchi), &c. Even a bank of living *Avicula tarentina* (Lam.) has been found four leagues off the mouth of the "bassin d'Arcachon," in 40–50 fathoms. This tends to prove a continuity of the fauna to which the species mentioned belong, from England, along the present coasts of France and Spain, to the Mediterranean. It makes its appearance wherever the locality is fit for its development; and therefore it is not necessary to account for the identity of British and Mediterranean species by assuming that an open communication existed across France. P. Fischer, L'Institut, 1868, Nov., or Rev. et Mag. Zool. 1868, pp. 460–462.

Mediterranean. In the second volume of H. C. Weinkauff's memoir on Mediterranean shells, there are enumerated, with their synonymy, 440 species of Gastropods, 14 Pteropods, 3 Heteropods, and 2 Cephalopods: their distribution along the Mediterranean and Atlantic shores, as well as in miocene (16 per cent.), pliocene (35 per cent.), and pleistocene strata (55 per cent.) is shown in a table.

Mr. G. Jeffreys has identified a rather large number of Mediterranean species with British (see his "Last Dredging Report," noticed above p. 426).—G. Hidalgo opposes several of these identifications. Journ. Conch. xvi. pp. 31–33.

One Cephalopod and 35 Gastropods of the families *Muricidæ*, *Buccinidæ*,

&c. are mentioned as being found on the shores of Sardinia by P. Gennari. Atti Soc. Ital. Sci. Nat. viii. 1866, pp. 328–335.

The two Mediterranean genera *Nesæa* and *Lachesis* (Risso) have been examined by N. Tiberi, Journ. Conch. xv. pp. 68–71; the Mediterranean species of *Odostomia*, ibid. pp. 60–68. The same author describes some new Mediterranean shells, ibid. pp. 179, 180, and a new genus, *Gyriscus*, ibid. pp. 56–60, which, however, is referred to *Torinia* by H. C. Weinkauff.

The *Rissoæ* from *Madeira* and the *Canary Islands* have been examined by A. Manzoni. Of 23 species there is one previously known from those localities, but not found elsewhere, *R. canariensis* (Orb.); 8 are new, the remainder European species, mostly British. Journ. Conch. xiv. pp. 236–256.

2. *Exotic Seas.*

Japan. C. E. Lischke describes seven new species from Japan, Mal. Blätt. xv. pp. 218–222.—A. Adams enumerates the Japanese species of the families *Cæcidæ*, *Corbulidæ*, *Volutidæ*, *Cancellariidæ*, and *Patellidæ*, Ann. & Mag. Nat. Hist. ii. pp. 363–370.

Pacific. W. Harper Pease describes new Polynesian shells, Am. Journ. Conch. iv. pp. 71–80, and points out the synonymy of many species from the same seas, ibid. pp. 103–132.

Magellan Straits. A general account of the mollusks found in this locality is given by Dr. Rob. O. Cunningham, Naturalist to the Magellan-Straits Survey Expedition. Proc. Zool. Soc. 1868, p. 186.—Eleven new species from the same locality are described by R. A. Philippi, Mal. Blätt. xv. pp. 222–226.

c. *Immigration and Acclimatization.*

Helix adspersa (Müll.) and *Bulimus decollatus* (L.) are said to have been introduced within historical times into France, and to have gradually spread over that country. Bourguignat in Moitessier's Hist. malacol. du département de l'Hérault, p. 94.

Helix adspersa (Müll.) and *pisana* (Müll.) are supposed by Dr. Mörch to have been introduced by the Romans into England, and *H. pomatia* (L.) by the same into the northern part of Germany. Journ. Conch. xvi. p. 350.

Helix lactea (Müll.) acclimatized at Montevideo. Hensel in Mal. Blätt. xv. p. 176, and Strobel, Atti Soc. Ital. Sc. Nat. xi. p. 552.—*H. adspersa* in gardens of S. Iago, Chile, and *Limax variegatus* (Drap.) at Buenos Ayres, Strobel, *l. c.*

Diplommatina huttoni (Pfr.) and *Ennea bicolor* (Hutt.) are two Indian shells, said to occur also in the West-Indian islands. The first is limited to the western part of the Himalayas, and it is desirable that the identity of the West-Indian form with that of the Himalayas should be confirmed. The second is widely spread, and its importation by the agency of man not improbable. Blanford, Ann. & Mag. Nat. Hist. i. p. 110–112.

Dreissena polymorpha (Pall.), found also at Heilbronn, Württemberg, by Hr. Fr. Drantz; F. Krauss, Jahresh. Ver. vaterländ. Naturk. Württ. xxiv. p. 44.—Its appearance in South-western France, 1862 in the Canal du midi, 1863 in the canal at Agen, and 1865 in the Garonne, is stated by Gassies, Journ. Conch. xvi. pp. 17–24.

Vivipara contectoides (Binney). J. Lewis has made an attempt at acclimatizing it in the Mohawk River and Erie Canal. Silliman's Journal, xlv. 1868, p. 137.

d. *Palæontology of Recent Species.*

The observations of G. Lindström confirm the theory of Prof. Lovén, viz. that in the postglacial time there was a period during which Germanic marine shells were more widely distributed in the Baltic than at present, *Litorina litorea* and *L. rudis* var. *tenebrosa*? being found only in the older postglacial deposits of the island of Gotland. Gotlands nutida Mollusker, pp. 44–46.

Dreissena polymorpha and *Cardium edule* have been found (extinct) in the desert of Kara-kum, north of the Syrdarja river, proving that Lake Aral had, in not very remote times, a much greater extent than at present. G. v. Helmersen, Bull. Ac. Sc. St. Pétersb. 1868, pp. 23–25.

Some species of land-snails, new, but nearly allied to species now living in the same island, have been found by A. Grandidier in Madagascar in a fossil state, with the eggs of *Æpyornis*, and are described by H. Crosse and P. Fischer, Journ. Conch. xvi. pp. 180–187, pl. 7. They are *Bulimus grandidieri* and *subobtusatus*, *Cyclostoma* (*Otopoma*?) *grandidieri*, with an imperfect *Helix* and a variety of the recent *Bulimus flavanni* (Lam.).

Classification in general.

Dr. J. E. Gray's introductory remarks to his Notes on the *Calyptræidæ* in Proc. Zool. Soc. 1867, p. 732, are reprinted, under the title "On the manufacturing of genera and species of modern authors, and on the nomenclature of the Cumingian Collection," in Am. Journ. Conch. iv. pp. 201–208.

CEPHALOPODA.

Dr. P. Bert's memoir on the physiology of *Sepia officinalis* (Mém. Soc. Sc. Phys. et Nat. de Bordeaux, v. 1867, pp. 115–138) contains much valuable information. We can only point out some of the numerous results. The large ganglion-mass situated above the œsophagus is quite insensible and inexcitable; it can be taken away without signs of pain to the animal; and after it has been taken away the animal is able to execute all its usual movements, if they are provoked by external irritation; but the voluntary action is lost. Therefore this part of the nervous system has the same function as the hemispheres of the cerebrum in Vertebrates. The ganglion-mass below the œsophagus is necessary for regulating the movements; it is excitable, and produces reflex motions. On the ganglion "en patte d'oie" depend the movements of the arms; the stellated or pallial ganglion is destined for the mantle, and has not shown any reflex motions. Not only the contents of the salivary glands are decidedly acid (compare Panceri's observations on *Cassis* &c.), but also the mixed secretions of the liver, the so-

called pancreas, and the spiral cæcum; the secretions of the last-named glands could not be examined separately. The organs called aquiferous pouches by Delle Chiaje, and peritoneal cæca by Milne-Edwards, produce an excretion which contains uric acid, and therefore are to be regarded as kidneys. The eggs are white within the genital organs, but appear black as soon as they are expelled; in one single instance they remained white, but proved to be sterile. Strychnia and curare have the same effect on this animal as on Vertebrates. The properties of the blood, which contains but little fibrine and globuline, are described; the phenomena of the animal slowly dying by asphyxia, when exposed to the air, are observed. All these observations were made in the laboratory attached to the Aquarium of the Scientific Society at Arcachon.

Loligo vulgaris (Lam.) moves alternately forwards and backwards by means of the terminal fin, but for more rapid movements it uses only the infundibulum. *Sepia officinalis* (L.) is much more sedentary; it swims, by ejecting water from the infundibulum, backwards and also forwards, in which latter case the infundibulum is bent back; for accelerating the movement forwards it uses the arms of the fourth pair; but it swims also sometimes only by an undulatory movement of the lateral fins; the two longer or tentacular arms are used for grasping its prey. *Octopus vulgaris* (Lam.) swims only backwards by means of the infundibulum, and feeds chiefly on *Cardium edule*, which it seems to suck without injuring the shell. Crosse, Journ. Conch. xvi. pp. 8–15.

Argonauta argo (Gmel. [better L.]), *tuberculosa* (Shaw), *hians* (Dillw.), and *gondola* (Dillw.), Küster, Conch. sect. 55. pp. 3–6, pl. 1. figs. 1–4 (old, bad figures), pl. 2. fig. 1 (bad), and pl. 3 *c*. fig. 1 (good, new). Some contradictory statements concerning the animal are mentioned by J. Ford, Am. Journ. Conch. iv. pp. 276, 277.

Octopus vulgaris (Lam.), *Sepia officinalis* (L.), and *Loligo media* (L.). Lingual dentition figured by Hogg, Transact. Roy. Microscop. Soc. xvi. pl. 9. figs. 21, 22, & 27.

Sepia officinalis (L.). Shelly plate figured, Küst. Conch. sect. 55, Argonauta, pl. 4. figs. 1, 2.

Sepioteuthis ovata, sp. n., Gabb, Am. Journ. Conch. iv. p. 193, pl. 17, Santa Cruz, West Indies.

Onychoteuthis æquimanus, sp. n., Gabb, *l. c.* p. 23, pl. 2, South Pacific, in the the vicinity of the Society Islands.

Spirula peronii (Lam.), Küster, Conch. sect. 55, Argonauta, p. 12, pl. 4. figs. 3–5.

Nautilus pompilius (L.), *scrobiculatus* (Solander), *macromphalus* (Sow.), *umbilicatus* (Lister) [this is an Antelinnean author, not admissible in systematic nomenclature], and *stenomphalus* (Sow.) described and figured by Küster, *l. c.* pp. 1–11, pl. 2. fig. 2 (old), pl. 3 (old), pl. 3 *a*, pl. 3 *b*, & pl. 3 *c*. fig. 2.

HETEROPODA.

Carinaria cristata (L.). Lingual dentition by Hogg, Transact. Roy. Microscop. Soc. xvi. pl. 9. fig. 25.

Atlanta. The localities of several species distinguished by colour and size, but not named, are given by H. Knocker, Proc. Zool. Soc. 1868, pp. 615-622.

Cheletropis. Some species described, but not named, by H. Knocker, *l. c.* pp. 615-622.

Ianthina communis (Lam.) = *bicolor* (Menke), *fragilis* (Lam.), *pallida* (Harvey), *prolongata* (Blainv.), *decollata* (Carpenter), *nitens* (Menke), *exigua* (Lam.), *trochoidea* (Reeve) = *Trochus janthinus* of Chemnitz, *planospirata* (Adams et Reeve), *balteata* (Reeve), *fibula* (Reeve), *casta* (Reeve), *depressa* (Reeve), and *africana* (Reeve). Küster, Conch. sect. 55. pp. 3–11, pl. 1. figs. 1–13, pl. 2. figs. 1–12.

Ianthina nitida, sp. n., A. Adams, Proc. Zool. Soc. 1868, p. 620, footnote, allied to *exigua* (Lam.), North Pacific. Other species caught by H. Knocker mentioned, *l. c.* pp. 615-622.

Recluzia jehennei and *rollandiana* (Petit), Küster, *l. c.* pp. 11, 12, pl. 1. figs. 15 & 14, copied from Petit's original paper in Journ. Conch. 1853.

PTEROPODA.

A rather large number of Pteropods and some other pelagic shells (51 species) caught in the tow-net in the Pacific and Atlantic are enumerated, with exact statements of the longitudes and latitudes, and with some additional remarks, by Commander Hugh H. Knocker. Several species are stated to occur in both oceans, in their southern parts as well as northern, viz. *Hyalæa longirostris* (Lesueur), *quadridentata* (Lesueur), *Creseis clava* (Rang), *spinifera* (Rang), *Spirialis bulimoides* (Orb.), and others. The hours between sunset and sunrise, especially on moonlight nights, are the most favourable for this object. The *Atlantæ* are the first to come to the surface, then the species of *Creseis*, and finally the *Hyalææ* and *Cleodoræ*, which appear usually an hour after sunset. Proc. Zool. Soc. 1868, pp. 615–622.

Hyalæa, Cleodora, Creseis, Cuviera, and *Spinalis.* A great number of localities for several species of these genera are given by H. Knocker; he thinks *Cl. pyramidata* (Péron) and *lanceolata* (Rang) to be distinct, having found both equally large, and describes some other species without giving them new names. *L. c.*

Clio borealis (Pall.) and other pteropods are stated to occur chiefly in those portions of the Arctic sea which abound in Diatomaceæ, and owe to these a dark hue. Brown, Journ. of Botany, March 1868; and Quarterly Journal of Microscopical Science, viii. 1868, p. 244.

GASTROPODA.

J. Hogg, in a paper on the lingual membrane of Mollusca, based on a large and valuable collection of these objects made by the late S. P. Woodward, speaks of the importance of the subject, using numerous quotations from papers by Dr. J. E. Gray and others. The four plates accompanying the paper are well executed, and refer to 84 species, several of which have not been previously described by any author. In the descriptions there are some misunderstandings, which show that the author is not quite familiar with the subject.

PECTINIBRANCHIATA.

Proboscidifera rhachiglossa.

Muricidæ.

Macdonald gives, as distinctive features of the lingual dentition of this family, strongly curved *simple* acuminate teeth in the pleuræ (lateral teeth or plates) and the origins of the central teeth usually being in bold relief upon the basal plates. He figures as examples the dentition of *Murex tenuispina*, fig. 3, and that of *Concholepas peruviana*, fig. 4, and enumerates the following genera as provided with a dentition of this description:—*Murex*, *Purpura*, *Iopas*, *Trophon*, *Monoceros*, *Vitularia*, *Rapana*, *Muricidea*, *Fusus* (*proboscidalis*), *Hemifusus*. Ann. & Mag. Nat. Hist. ii. p. 243, pl. 16. Dr. J. E. Gray objects to this being a character of the family, ibid. p. 386. It appears that this will lead to the union of the family *Purpuridæ* with the *Muricidæ*.

Murex trunculus (L.). Lingual dentition by Hogg, Trans. Roy. Microscop. Soc. xvi. pl. 10. fig. 35.

Murex brandaris (L.). Varieties without spines, Weinkauff, Conch. d. Mittelm. ii. pp. 84, 85.—*M. trunculus* (L.), its variations; *falcatus* (Brusina) is one of them, ibid. pp. 85-87. — *M. edwardsi* (Payr.), a variety without varices is *nux* (Reeve as *Purpura*), ibid. p. 87.—*M. gibbosus* (Lam.) from Algeria, ibid. p. 92.—*M. erinaceus* (L.), its varieties, including *tarentinus* (Lam.), *cinguliferus* (Lam.), *decussatus* (Brocchi), and *bracteatus* (Sandri), ibid. pp. 93–95.

Murex troscheli, sp. n., Lischke, Mal. Blätt. xv. p. 219, Nagasaki, near to *M. aduncospinosus* (Beck).

Murex garrettii, new name for *exiguus* (Garrett), which is preoccupied. Pease, Am. Journ. Conch. iv. p. 103.

Trophon antarcticus, sp. n., Philippi, Mal. Blätt. xv. p. 225, Straits of Magellan.

Fusus inconstans, sp. n., Lischke, Mall. Blätt. xv. p. 218, Yeddo and Nangasaki; allied to *torulosus* (Lam.).—*F. unicarinatus*, sp. n., Philippi, ibid. p. 223, Straits of Magellan.

Purpuridæ.

Purpura hæmastoma (L.). On its occurrence on the shore of Algeria, often without other species of shells. Weinkauff, Conch. d. Mittelm. ii. p. 53.—Lingual dentition by Hogg, Trans. Roy. Microscop. Soc. xvi. pl. 10. fig. 36.

Purpura. Pease (Am. Journ. Conch. iv.) describes as new *P. marmorata* from Apiana Island (Polynesia), p. 92, pl. 11. fig. 5; and remarks on the following species:—*P. aperta* (Blainv.)=*macrostoma* (Conrad)=*hiulca* (Val.); *P. harpa* (Conrad)=*scopina* (Reeve, not Quoy & Gaim.); *P. affinis* (Reeve)=*armigera* (Chemn.); *P. aculeata* (Regenf.) and *plicata* (Lam.)=*hippocastanum* (Lam.): pp. 109, 110.

Iopas sertum (Brug.), *francolinus* (Brug.), and *situla* (Reeve) considered to be varieties. Pease, Am. Journ. Conch. iv. pp. 118, 119.

Vexillia (Adams). To this genus belong:—*Purpura leucostoma* (Desh.), Bourbon; *Planaxis cingulata* (Gould), Japan; *V. lineata* (A. Ad.)=*Purpura striatella* (Garrett); and *V.* (*Usilla*) *fusconigra* (Pease). Pease, *l. c.* p. 115.

Ricinula horrida (Lam.), *jodostoma* (Less.), *clathrata* (Lam.), *arachnoides* (Lam.), *albolabris* (Blainv.), *digitata* (Lam.), *elegans* (Brod.), *tuberculata* (Blainv.), *morus* (Lam.), *marginella* (Blainv.), *aspera* (Lam.), *nodulosa* (Adams), *mendicaria* (L.), *heptagonalis* (Reeve), *spectrum* (Reeve), *alveolata* (Kien.), *ochrostoma* (Blainv.), *zonata* (Reeve), *lauta* (Reeve), *carbonaria* (Reeve), *funiculata* (Reeve), *deformis* (Reeve), *bicatenata* (Reeve), *fiscellum* (Chemn.), *elongata* (Blainv.), *pulchra* (Reeve), *concatenata* (Blainv.), *fragum* (Blainv.), *chrysostoma* (Desh.), *trifasciata* (Reeve), *rosea* (Reeve), *spectrum* var. *turbinella* (Kien.), *mutica* (Lam.), *ferruginosa* (Reeve), *lineata* (Reeve), *chaidea* (Duclos), *elata* (Blainv.), *concinna* (Reeve), *eximia* (Reeve), *cavernosa* (Reeve), and *contracta* (Reeve). Küster, Conch. sect. 55. pp. 3–32, pls. 1–5: figures good, most from specimens in private collections in Germany; a few appear to be copied from Reeve. New are the following:—*Ricinula eburnea*, p. 17, pl. 3. fig. 9, Indian Ocean; *R. fusca*, p. 26, pl. 4. fig. 16, locality not known; and *R. albovaria*, p. 31, pl. 5. figs. 14, 15, locality not known.

[*Ricinula*] *Sistrum rugulosum*, sp. n., Pease, Am. Journ. Conch. iv. p. 93, pl. 11. fig. 7, Howland Island, Polynesia.—*S. ochrostoma* (Blainv.)=*Pur. nassoides*, var., of Quoy and Gaimard=*Ric. echinata* (Reeve); *S. cancellatum* (Q. & G. as *Purpura*)=*Purp. fenestrata* (Blainv.)=*Ric. elongata* (Reeve). Pease, ibid. pp. 116, 117,.

Enzina dumosa (Conrad as *Purpura*)=*Ricinula porphyrostoma* (Reeve) and *E. bella* (Reeve as *Ricinula*)=*Voluta fragaria* (Wood)=*Turbinella carolinæ* (Kien.). Pease, *l. c.* p. 123.

Cuma muricina (Blainville)=*muricoides* et *turbinoides* (Blainv.)=*tessellata* (Sow.)=*foliacea* (Conrad). Pease, *l. c.* p. 111.

Latiaxis tectum sinense (Desh. as *Murex*), *L. laceratus* (Desh. as *Murex*)=*Mur. cariniferous* (Sow. Ill.), and *L. benoiti* (Tiberi as *Murex*), in the Mediterranean. Weinkauff, Conch. d. Mittelm. ii. pp. 96, 97, & 441.

Coralliophila lamellosa (Jan as *Fusus*), *C. scalaris* (Brocchi as *Murex*), and *brevis* (Blainv. as *Purpura*)=*Pyrula squamulata* (Phil.), in the Mediterranean, Weinkauff, *l. c.* pp. 97, 99.

Coralliophila. The Polynesian species are enumerated by Harper Pease as follows:—*neritoidea* (Chemn., Lam.)=*violacea* (Kien.)=*squamulosa*

(Reeve); *galea* (Chemn.)=*abbreviata* (Lam.)=*Mur. subglobosus* (Wood); *costularis* (Lam.); *bulbiformis* (Conrad)=*gibbosa* (Reeve); *deformis* (Lam.) =*abbreviata*, var., of Kiener=*Rhizochilus exaratus* (Pease).

Rhizochilus monodonta (Quoy et Gaim.)=*madreporarum* (Sow.). On the synonymy and young state. Pease, *l. c.* p. 112.

Buccinidæ.

Macdonald takes, as a distinctive feature of the lingual dentition of this family, the presence of a stout conical fang at the inner extremity of the pleural plates (lateral teeth); he figures as examples the dentition of *Buccinum undatum*, fig. 1, and *Cassidulus melongena*, fig. 2. He enumerates the following genera as being provided with a dentition of this description:—*Buccinum, Cantharus, Pisania, Pusiostoma, Cominella, Chrysodomus, Nassa, Neritula, Cassidulus*, and *Triumphis*. Ann. & Mag. Nat. Hist. ii. p. 242, pl. 16.

Buccinum actoni, sp. n., Philippi, Mal. Blätt. xv. p. 223, Straits of Magellan.

Cominella maculosa (Martyn). Lingual dentition by Hogg, Transact. Roy. Microscop. Soc. xvi. pl. 10. fig. 33.

[*Neptunea*] *Fusus antiquus* (L.) and *gracilis* (Da Costa). Lingual dentition by Hogg, *l. c.* figs. 31 & 32.

Fusus jeffreysianus, sp. n., common on the western coasts of France, allied to *propinquus* (Alder) and *gracilis* (Da Costa); besides these, three, *F. antiquus* (L.), *berniciensis* (King), and *contrarius* (L.), are found on the same coast. Fischer, Journ. Conch. xvi. p. 37.

Eutria cornea (L.)=*Fusus lignarius* (Lam.). On its variation and synonymy, Weinkauff, Conch. d. Mittelm. ii. pp. 109–111.

Pusionella nifat (Brug.), rare, but a living specimen received at Algiers by Weinkauff, *l. c.* p. 112.

Pisania strigata, sp. n., Pease, Am. Journ. Conch. iv. p. 93, pl. 11. fig. 6, Isl. Ponapé, Polynesia; *F. buccinula* (Martini)=*Bucc. flammlatum* (Quoy et Gaimard)=*pictum* (Reeve), Pease, ibid. p. 104.

Tritonidea fumosus (Dillw.)=*Bucc. strigosum* (Gmel. no. 106)=*cinctum* (Quoy et Gaimard)=*proteus* (Reeve). Pease, *l. c.* p. 104.

Lachesis (Risso). This genus is reestablished by N. Tiberi, Journ. Conch. xvi. pp. 69–74, as follows:—Testa fusiformis, apice mamillata; spira valde elevata; anfractus convexiusculi, sutura parum profunda divisi; apertura ovato-lanceolata, in canalem subito desinens; labrum simplex, integrum, scissura nulla interruptum; columella nuda; cauda recta, brevissima.

1. *L. minima* (Mont. as *Buccinum*)=*Murex folineæ* (Chiaje)=*Fusus turritellatus* (Desh.), pl. 5. fig. 7.—2. *L. mamillata* (Risso)=*Bucc. lefebvrii* (Maravigna)=*Pleurotoma perlatum* (Requien), pl. 5. fig. 6.—3. *L. areolata* (Tiberi)=*Fusus* and *Bucc. granulatum* (Calcara)=*Bucc. folineæ* (Phil.). All Mediterranean.

Nesæa (Risso). Also this genus is reestablished by N. Tiberi, *l. c.* pp. 74–80. Testa ovato-elongata, apice mamillata; spira modice elevata; anfractus rotundati; sutura profunda divisi; apertura ovata; labrum integrum, extus varicosum, columella nuda; cauda recta, brevissima, truncata.

1. *N. granulata* (Risso), including his *N. mamillata* and *Pleurotoma chauveti* (Requien).—2. *N. lineolata*, sp. n., Tiberi, *l. c.* p. 76, pl. 5. fig. 5; the young of this species is *Murex massenæ* of Chiaje, not Risso.—3. *N. candidissima* (Phil. as *Bucc.*), Tiberi, *l. c.* pl. 5, fig. 4. All Mediterranean.

Weinkauff unites both these genera under the name of *Lachesis*, and distinguishes only three Mediterranean species:—*L. minima* (Mont.), a variety of it with thickened lip is *Nesæa mamillata* and *granulata* (Risso); *L. candidissima* (Phil.), including as a variety *lineolata* (Tiberi) and *folineæ* (Chiaje); the same species occurs with and without thickened lip. Conch. d. Mittelm. ii. pp. 116–118 & 441, 442. [The Recorder thinks that both genera may be safely united, as long as no other differences are known; but as neither the operculum nor the radula are known, the systematic place is uncertain.]

Nassaria acuminata (Reeve). Median plate of the radula rectangular, with six teeth on its hinder edge; lateral plates bicuspidate. Troschel, Wiegm. Arch. 1868, p. 160, pl. 3. fig. 5.

Nassaria farinosa (Gould)=*Hindsia angicostata* (Pease). Pease, Am. Journ. Conch. iv. p. 109.

Eburna lutosa (Lam.). Median plate of the radula a little arcuated, with five teeth on its hinder edge, the middle three larger; lateral plates bicuspidate; no accessory plates. Closely allied to *Phos* (Montf.). Troschel, *l. c.* pp. 158–160, pl. 3. fig. 4.

Nassidæ.

Nassa reticulata (L.). Lingual dentition by Hogg, Transact. Roy. Microscop. Soc. xvi. pl. 10. fig. 34.

Nassa. On the Mediterranean species, their synonymy and variation, see Weinkauff, Conchyl. d. Mittelm. ii. pp. 57–69.

Nassa ebenacea, sp. n., Gennari, Atti Soc. Ital. Sci. Nat. viii. p. 333 (1866), Sardinia. [Perhaps not distinct from *mutabilis* (L.).]

Nassa japonica, sp. n., Lischke, Mal. Blätt. xv. p. 220, Nagasaki. The author changes this name into *balteata* (xvi. 1869, p. 207), the former being preoccupied.

Nassa moreleti (Crosse, Journ. Conch. xv. 1867) fully described and figured by Crosse, Journ. Conch. xvi. p. 169, pl. 6. fig. 3, locality unknown.

Nassa gaudiosa (Hinds)=*lilacina* (Gould), *N. lurida* (Gould)=*dispar* (A. Adams?, Reeve)=*graphitera* (Beck), *N. albescens* (Dunker)=*bicolor* (Hombr. et Jacq.), *obliqua* (Hombr. et Jacq.)=*onerata* (Desh.), *costellifera* (A. Ad.)=*quoyii* (Hombr. et Jacq.). Pease, Am. Journ. Conch. iv. pp. 107, 108.

Cyclope neriteus [-*a*]. On its variations, the larger chiefly in brackish water, Weinkauff, Conch. d. Mittelm. ii. pp. 53–55.

Olividæ.

Oliva. Marrat (Ann. & Mag. Nat. Hist. ii. pp. 167, 168) states that *O. vesica* (Gm.)=*auricularia*, part. (Lam.)=*auricularia* (Reeve)=*patula*, part. (Sow.); *O. aquatilis* (Reeve) ought to retain the name *auricularia* (Lam.); *Olivarcillaria auricularia* (D'Orb.) is distinct, and to be called *O. orbignyi*. He describes as new the following (pp. 212–214):—*O. lignaria*, Borneo; *O. angustata*, China; *O. exilis*, South America; *O. pulchra*, California?; *O. sabu-*

losa and *O. nota*, hab. ?.—Mr. Graham Ponton believes that ten species out of the twelve described by Mr. Marrat (*l. c.* xx. 1867, pp. 213–215) belong to known forms (*l. c.* 1868, i. pp. 344, 345); but Mr. Marrat is not convinced of this (ibid. pp. 472–475).

Fasciolariidæ.

Latirus liratus, sp. n., = *gemmatus*, var., Reeve, Marquesas Islands, Pease, Am. Journ. Conch. iv. p. 152.

Volutidæ.

Cymbium papillatum (Schumacher) = *olla* of most authors, but not L., from Gibraltar, Weinkauff, Conch. d. Mittelm. ii. p. 23.—Its radula figured by Hogg, Transact. Roy. Microscop. Soc. xvi. pl. 10. fig. 38.

Melo georginæ (Gray) passes into *M. ducalis* (Lam.) and into *diadema* (Lam.) by a series of gradations; *Cymba porcina* (Lam.) is not to be distinguished by the number of columellar plaits from *C. proboscidalis* (Lam.); but *C. navicula* (Gmel.) and *C. patula* (Brod.) are distinct species, and not the young state of *C. neptuni* (Lam.). Ponton, Proc. Zool. Soc. 1868, p. 374.

Voluta. These mollusks bury themselves in the sand as soon as the water falls, and are therefore not to be seen even if present in plenty. Cutler, in a letter to Dr. Gray, Ann. & Mag. Nat. Hist. i. p. 310, copied in Am. Journ. Conch. iv. p. 164.—*V. magellanica* and other species have been found burrowing in the sand in the Magellan Straits by Dr. Cunningham, Ann. & Mag. Nat. Hist. ii. p. 454.

Voluta thatcheri, sp. n., M'Coy, ibid. i. p. 54, pl. 2. fig. 1, locality unknown, probably Australia.

Voluta rückeri (Crosse, Journ. Conch. xv. 1867), from Swan River, Australia, fully described and figured by Crosse, Journ. Conch. xvi. p. 97, pl. 1. fig. 1.

Mitridæ.

Mitra fusca (Swains.). Lingual dentition by Hogg, Transact. Roy. Microscop. Soc. xvi. pl. 10. fig. 37.

Mitra. The Mediterranean species, viz. *ebenus* (Lam), including as varieties *defrancii* (Payr.) and *plumbea* (Lam.), *M. cornicula* (L.) = *schröteri* (Chemn.) = *cornicularis* (Lam.) = *lutescens* (Lam.), and *M. cornea* (Lam.), including as variety *philippiana* (Forbes), are described by Weinkauff, Conch. d. Mittelm. ii. pp. 25–30.

Mitra crouani, sp. n., Crosse, Journ. Conch. xvi. p. 274, pl. 9. fig. 6, Galapagos. Belongs to the subgenus *Imbricaria* (Schum.).

Mitra aurora (Dohrn) is var. of *coronata* (Chemn.), *adamsii* (Dohrn) of *dermestina* (Lam.), *nux-avellana* (Dohrn) = *pusilla* (Pease), *wiesemanni* (Dohrn) = *bella* (Pease), *samuelis* (Dohrn) perhaps = *astricta* (Reeve), *striata* (Gray) = *columbellæformis* (Quoy), *flammigera* (Reeve) and *interlirata* (Reeve) = *flammea* (Quoy), *ferrugata* (Dillw.) and *cucurbitina* (Phil.) = *cucumerina* (Martini, Desh.). Pease, Am. Journ. Conch. iv. pp. 119–121.

Columbella rustica (L.) including *spongiarum* (Kien.), and *C. scripta* (L.) including as variety *gervillei* (Payr.) = *nasuta* (Brusina), are described by Weinkauff, *l. c.* pp. 34–37.

[*Columbella*] *Buccinum antarcticum*, sp. n., Philippi, Mal. Blätt. xv. p. 222,

allied to *B.* [*C.*] *minus* (Scacchi); *Columbella ebenum*, sp. n., Philippi, ibid. p. 223: both from the Straits of Magellan.

Columbella fusiformis is a new name for *pusilla* (Pease), which is preoccupied; *C. palumbina* (Gould) and *sandwichensis* (Pease) are=*turturina* (Lam.); *pellucida* (Pease)=*rorida* (Reeve); *nana* (Kien.) and *pallida* (Desh.)=*pœcila* (Sow.). Pease, *l. c.* p. 122.

Citharopsis, gen. nov. Testa parva, fusiformi, longitudinaliter costata, nitida, interdum iridescente; labro superne emarginato, intus lirato aut denticulato; apertura angusta. They belong evidently to the Columbellinæ [and may properly be included in the genus *Columbella*; there is already another genus of the same name, established by A. Adams in 1865, Ann. & Mag. Nat. Hist. xv. p. 323, and this Record, ii. p. 250]. To this genus are referred the species *Triton pusillus* (Pease), *Columbella lachryma* (Gaskoin), and two new ones, viz. *ornata*, from Tahiti, and *gracilis* from the Paumotu Islands. Pease, *l. c.* p. 97, pl. 11. figs. 19 and 20.

Proboscidifera tænioglossa.

Cassididæ and Ranellidæ.

M. Panceri has continued his observations on the secretion of sulphuric acid in some Gastropods. The salivary glands of the Mediterranean species of the genera *Dolium*, *Cassis*, *Cassidaria*, and *Tritonium* are double, consisting of a superior lobe which is of acinose structure, and homologous to the salivary gland of other Gastropods, and of an inferior lobe of tubular structure, which secretes the sulphuric acid; it is enveloped in a muscular membrane, the contraction of which serves to expel the fluid. In *Ranella gigantea* this organ is absent, and no free acid was discovered in it. Ann. Sci. Nat. x. pp. 89–92. See also *Pleurobranchidæ*.

Cassis saburon (Brug.) and *C. sulcosa* (Brug.). On their variations, Weinkauff, Conch. d. Mittelm. ii. pp. 39–44.

Cassidaria echinophora (L.). On its varieties, including *depressa* (Phil.), but *C. tyrrhena* (Chemn.) admitted as a distinct species, Weinkauff, *l. c.* pp. 47–51.

Cassis saburon (Brug.). Lingual dentition and jaw by Hogg, Transact. Roy. Microscop. Soc. xvi. pl. 9. fig. 26.

Tritonium parthenopus (Salis)=*succinetum* (Lam.) from the Mediterranean, Weinkauff, *l. c.* p. 77. [Misspelt for *parthenopeum*.]

Triton [*-ium*] *dunkeri*, sp. n., Lischke, Mal. Blätt. xv. p. 219, Nagasaki, allied to *pyrum* (Lam.).

Triton cylindricus, sp. n., Pease, Am. Journ. Conch. iv. p. 94, pl. 11. fig. 9, Tahiti.—*Tr. tortuosus* (Reeve) is var. of *distortus* (Schub. et Wagn.), and *Tr. gemmatus* (Reeve)=*mundus* (Gould), Pease, ibid. pp. 106, 107.

Ranella gigantea (Lam.), *Murex olearium* (L.), and *M. reticularis* (L.) are rather doubtful synonyms, Weinkauff, *l. c.* pp. 71–73.—*R. affinis* (Reeve) =*livida* (Reeve), and *R. pusilla* (Brod.)=*Triton laciniatum* (Mighels), Polynesia, Pease, *l. c.* p. 107.

Bufonaria scrobiculator (L.) is Adanson's *jabik*, Weinkauff, *l. c.* p. 75.

Cypræidæ.

Cypræa arabica (L.) and *europæa* (Mont.). Lingual dentition by Hogg, Transact. Roy. Microscop. Soc. xvi. pl. 9. figs. 28 & 29.

Cypræa bregeriana, sp. n., Crosse, Journ. Conch. xvi. p. 277, New Caledonia.

Cypræa polita, sp. n., Roberts, Am. Journ. Conch. iv. p. 70, pl. 15. figs. 1–3, probably from the Sandwich Islands; *C. annæ*, sp. n., Roberts, *l. c.* p. 250, pl. 15. figs. 4–6, Sandwich Islands; *C. helenæ*, sp. n., Roberts, *l. c.* p. 250, pl. 15. figs. 7–10, locality not known.

Cypræa fuscodentata (Gray), a full-grown specimen described by F. P. Marrat, Ann. & Mag. Nat. Hist. ii. p. 455.

Cypræa physis (Brocchi) = *achatidea* (Gray) is distinct from *pyrum* (Gmel.), Weinkauff, Conch. d. Mittelm. ii. p. 12.—*C. annulus* (L.) and others are not Mediterranean, ibid. pp. 14–17.

Cypræa fuscomaculata and *candida*, spp. nn., Pease, Am. Journ. Conch. iv. p. 95, pl. 11. figs. 10, 11, and 12, 13, Apaian Isl., Polynesia.—*C. unifasciata* (Mighels) is=*fimbriata* (Gmel.), *semiplota* and *spadix* (Mighels)=*staphylea* (Lam.), Pease, ibid. p. 126.

Trivia corrugata, sp. n., Pease, *l. c.* p. 95, pl. 11. figs. 14, 15, Paumotu Islands.—*Cypr. pilula* (Kien.) and *sphærula* (Mighels) are = *Tr. globosa* (Gray), *scabriuscula* (Gray) and *intermedia* (Kien.)=*oryza* (Lam.), *hordacea* (Kien.) = *insecta* (Mighels), Pease, *l. c.* pp. 126, 127.

Luponia castanea, sp. n., Higgins, Proc. Zool. Soc. 1868, p. 178, pl. 14. fig. 1, South-eastern Africa.

Naticidæ.

Natica. On the Mediterranean species, their synonymy and variations, see Weinkauff, Conchyl. d. Mittelm. ii. pp. 243–258.

Velutinidæ.

Velutina lævigata (Gm.). Lingual dentition and jaw by Hogg, Transact. Roy. Microscop. Soc. xvi. pl. 9. fig. 19.

Natica catenata (Phil.). Its habitat is not known with certainty, perhaps Mazatlan. Graham Ponton, Ann. & Mag. Nat. Hist. i. p. 385.

Sigaretus striatus (Marcel de Serres) = *haliotideus* of most authors. Weinkauff, Conch. d. Mittelm. ii. p. 259.

Cerithiopsidæ.

Cerithiopsis tubercularis (Mont.) = *Cerithium pygmæum* (Phil.) = *acicula* (Brusina), and *C. minimus* (Brusina) = *Cerithium neglectum* (Sow. Thes.) Algiers and Adriatic, Weinkauff, Conch. d. Mittelm. ii. pp. 169, 170.

Proboscidifera ptenoglossa.

Scalariidæ.

Scalaria trevelyana (Turt.). Lingual dentition and jaw by Hogg, Transact. Roy. Microscop. Soc. xvi. pl. 13. fig. 84.

Scalaria tenuicostata (Mich.) is a variety well distinguished by its more

slender form from *turtonis* (Turt.); both occur in the Mediterranean. Weinkauff, Conch. d. Mittelm. ii. pp. 234–236.—*Sc. scacchii* (Hörnes)=*Rissoa coronata* (Scacchi, Phil.), living at Naples and Nice, ibid. p. 238; *Sc. pulchella* (Bivona) distinct from *clathratula* (Mont.), p. 238; *schultzii* (Weinkauff)=*multistriata* of Philippi not of Say, p. 238; *pumicea* (Brocchi)=*varicosa* (Lam.), Bona in Algeria and Girgenti in Sicily, p. 240; *crenata* (L.), also in the Mediterranean, p. 241.

Scalaria soluta (Tiberi, Journ. Conch. xi. 1863) figured from a more perfect specimen, Journ. Conch. xvi. pl. 5. fig. 2, Naples and Sardinia.

Constantia elegans (A. Adams), Straits of Korea, figured Journ. Conch. xvi. pl. 4. fig. 4.

Crossea miranda and *Cr. bellula* (A. Adams), from Gotto Islands, Sea of Japan, figured in Journ. Conch. xvi. pl. 4. figs. 8 and 9.

Solariidæ.

Solarium pulchellum, sp. n., Tiberi,=*S. pseudoperspectivum* (Philippi, foss., not Brocchi)=*S. sulcatum* (Costa, not Lamarck), Journ. Conch. xvi. p. 179, Naples and Tarentum.

Solarium pseudoperspectivum (Brocchi), recent specimens rare in the Mediterranean; *S. conulus*, new name for *luteum* of Philippi, the true *luteum* (Lam.), from Australia, being somewhat different; *siculum* (Cantraine)=*stramineum* of Philippi and other authors, to be distinguished from the South-African *stramineum* (Gmel.). Weinkauff, Conch. d. Mittelm. ii. pp. 260–263.

Torinia variegata (Lam.), a variety sinistral and scalariform, Lagoda, Journ. Conch. xvi. p. 264, pl. 9. fig. 7.

Torinia discoidea, sp. n., Pease, Am. Journ. Conch. iv. p. 102, pl. 12. fig. 18, Paumotu Island.—*Solarium cingulum* (Kien.) and *layardi* (A. Ad.) are=*T. hybrida* (L.), Pease, ibid. p. 123.

Gyriscus jeffreysianus (Tiberi) [see Zool. Record, iv. p. 541] is fully described and figured by Tiberi, Journ. Conch. xvi. pp. 57–60, pl. 5. fig. 1, and its systematic position determined by H. Crosse as near *Torinia*. Weinkauff mentions it as *Solarium jeffreysianus*, Conch. d. Mittelm. ii. p. 448.

Proboscidifera gymnoglossa.

Pyramidellidæ.

The Mediterranean species are arranged as follows by Weinkauff, Conch. d. Mittelm. ii. pp. 207–230, who differs from Jeffreys in several points:—

I. Turbonilla (Risso): *elegantissima* (Mont.)=*campanellæ* (Phil.); *gracilis* (Phil.); *obliquata* (Phil.), also at Algiers; *terebellum* (Phil.), also at Algiers, recent; *pusilla* (Phil.); *densecostata* (Phil.); *striolata* [*striatula*] (L.)=*pallida* (Phil.); *rufa* (Phil.); *scalaris* (Phil.); *indistincta* (Mont.)=*clathrata* of Forb. and Hanl.; *fenestrata* (Forb., Jeffr.); *humboldti* (Risso), a variety of it is *striata* (Danilo and Sandri); *clathrata* (Jeffr.); *interstincta* (Mont.)=*Rissoa striata* (Phil.); *ambigua*, a new name for *Rissoa gracilis* (Phil.); *tricincta* (Jeffr.); *excavata* (Phil. as *Rissoa*); *internodula* (Wood), recent at Bona, p. 446.

II. Odontostomia (Flem., Phil.): *dolioliformis* (Jeffr.); *conoidea* (Brocchi as *Auricula*)=*eulimoides* (Jeffr.); *acuta* (Jeffr.); *unidentata* (Mont.); *plicata*

(Mont.), including as varieties *Rissoa elongata* (Phil.), *O. eulimoides* (Hanl.) =*pallida* and *notata* (Jeffr.), and *novegradensis* (Brusina), p. 446; *rissoides* (Hanl.); *warreni* (Thomps.); *obliqua* (Alder)=*Auriculina exilissima* (Brusina); *vitrea* (Brusina); *neglecta* (Tiberi), p. 446.

III. Chemnitzia (Orb.): *unica* (Mont.); *nitidissima* (Mont.); *affinis* (Phil.); *striatula* (Jeffr. as *Eulimella*).

IV. Eulimella: *scillæ* (Phil.); *acicula* (Phil.); *subcylindrata* (Dunker), Algiers.

Odostomia. The Mediterranean species of this genus are enumerated by N. Tiberi, Journ. Conch. xvi. pp. 60–68, as follows:—

A. Turbonilliformes: 1. *humboldti* (Risso); 2. *tricincta* (Jeffr.), with a var. *bicincta*; 3. *indistincta* (Mont.); 4. *interstincta* (Mont.)=*Rissoa suturalis* (Phil.); 5. *terebellum* (Phil. as *Chemnitzia*); 6. *excavata* (Phil. as *Rissoa*).

B. Rissoiformes: 7. *acuta* (Jeffr.); 8. *unidentata* (Mont.); 9. *conoidea* (Brocchi)=*polita* (Bivona); 10. *conspicua* (Alder); 11. *plicata* (Mont.), a variety of it is *Rissoa elongata* (Phil.); 12. *eulimoides* (Hanl.); 13. *rissoides* (Hanl.); 14. *obliqua* (Alder); 15. *warrenii* (Thomps.)=? *Rissoa galvagni* (Aradas); 16. *neglecta*, sp. n., Tiberi, *l. c.* p. 67, pl. 5. fig. 3, Sicily; 17. *dolioliformis* (Jeffr.); 18. *insculpta* (Mont.).

Odostomia warreni (Thomps.), reestablished as a distinct species by Gw. Jeffreys, who has dredged it in the Shetland Isles; foot forked at the end. The animal keeps itself suspended from the surface of the water for some time by means of a fine glutinous thread. Ann. & Mag. Nat. Hist. ii. p. 299.

Iolæa scitula (A. Adams), Straits of Korea, figured Journ. Conch. xvi. pl. 4. fig. 3.

Aclis ascaris (Turt.)=*supranitida* (Lovén)=*Turritella umbilicata* (Dunker); there are specimens in which the upper whorls are smooth, the last striated, and others in which the striæ make their appearance on the last whorl only. Weinkauff, Conch. d. Mittelm. ii. p. 232.

Eulimidæ.

Eulima subpellucida, sp. n., Pease, Am. Journ. Conch. iv. p. 94, pl. 11. fig. 8, Tahiti.—*E. philippii*, new name for *distorta* of Philippi and other authors, which is probably not the *distorta* of Deshayes. Weinkauff, Conch. d. Mittelm. ii. p. 229.

Styliferidæ.

Stylifer speciosus, sp. n., H. Adams, Proc. Zool. Soc. 1868, p. 285, pl. 38. fig. 4, Mauritius. Several species of *Stylifer* and *Eulimidæ* were found parasitic in the intestinal tract of some Holothuriæ, in the Philippines, by C. Semper, Reise in den Philippinen, vol. i. Holothurien, pp. 98, 99.

Plicifer, g. n. Testa imperforata, ovato-subulata, non nitens; spira in stylum producta, nucleo sinistrali; columella plicata; labro flexuoso, postice sinuato; apertura antice integra. *Pl. nevelli*, sp. n., Ceylon; *Hyala abnormis* (Gould) is probably a second species of this genus. H. Adams, Proc. Zool. Soc. 1868, p. 292, pl. 28. fig. 16.

Entoconcha mirabilis (J. Müll.). Dr. Baur's paper on this mollusk [see Zool. Record, vol. i. p. 208] has been republished under the title "Nouveaux documents sur le genre *Entoconcha*," in Journ. Conch. xvi. pp. 136–139.—*Entoconcha mülleri*, sp. n., indicated but not sufficiently described by Dr. C.

Semper, Reise in den Philippinen, vol. i. Holothurien, p. 98, found in a *Synapta* from the Philippines.

Toxoglossa.

Conidæ.

Conus floridanus, sp. n., Gabb, Am. Journ. Conch. iv. p. 195, pl. 15. fig. 4, Tampa Bay, Florida.

Conus obscurus(Reeve) is an immature form of *tulipa* (L.); *pusillus*(Chemn.) and *nanus* (Brod.) are=*ceylonensis* (Brod.); *parvus* is a new name for *fusiformis* (Pease), which is preoccupied. Pease, Am. Journ. Conch. iv. p. 126.

Conus (*Chelyconus*) *borbonicus*, sp. n., H. Adams, Proc. Zool. Soc. 1868, p. 288, pl. 28. fig. 1, Bourbon.

Pleurotomidæ.

Radula of "*Cithara* (*Mangelia*) *gracilis*" figured by Hogg, Transact. Roy. Microscop. Soc. xvi. pl. 9. fig. 30. [This is probably *Defrancia gracilis* (Mont.), which belongs to the Toxoglossa, not to the Tænioglossa; the specimen was thought to be imperfect, and is represented in an unnatural position.]

The Mediterranean *Pleurotomidæ* are arranged in the following manner by Weinkauff, Conch. d. Mittelm. ii. pp. 116–146.

I. Lachesis (Risso). (See above, p. 449.)

II. Bela (Gray): *rufa* (Mont.), doubtful as Mediterranean; *lyciaca* (Forb.); and *septangularis* (Mont.).

III. Pleurotoma (Lam.): *undatiruga* (Bivona)=*tenuis* (Reeve)=*balteata* (Beck, M'Andrew), not very rare on the shores of Algeria in considerable depths, p. 121; *crispata* (Jan)=*barbieri* (Brusina); *teres* (Forb.); *maravignæ* (Bivona)=*elegans* (Phil.).

IV. Mangelia (Risso part., Reeve): *sicula* (Reeve), unknown to author; *bertrandi* (Payk.); *rugulosa* (Phil.); *coarctata* (Forb.); *cærulans* (Phil.); *vauquelini* (Payk.); *tæniata* (Desh.)=*sandriana* (Brusina); *secalina* (Phil.).

V. Defrancia (Millet, non Gray, nec Adams): *delosensis* (Reeve) [this is very unclassical, instead of *delia*]; *reticulata* (Renier)=*cordieri* (Payk.), *purpurea* (Mont.), a variety of it is *philberti* (Mich.); *leufroyi* (Mich.); *la-viæ* (Phil.); *linearis* (Mont.), a variety of it is *scabra* (Jeffr., Sow.)=*cyrilli* of Sandri and Brusina; *clathrata* (Marcel de Serres)=*granum* (Phil.)=*quadrillum* (Brusina).

VI. Raphitoma (Bellardi part.): *gracilis* (Mont.)=*comarmondi* (Mich.) =*vulpecula* (Brusina); *attenuata* (Mont.); *payraudeaui* (Desh.), from Provence and Algeria, rare; *albida* (Desh.), Greece; *pusilla* (Scacchi); *multilineata* (Desh.); *costulata* (Blainv.), a variety of it is *striolata* (Scacchi, Phil.); *brachystoma* (Phil.), including as variety *ægeensis* (Forbes), p. 442; *fortis* (Forbes); *cycladensis* (Reeve); *nuperrima* (Tiberi), p. 443; *nana* (Scacchi)=*turgida* (Forbes); *abyssicola* (Forbes); *minuta* (Forbes); *nebula* (Mont.), var. β of it =*ginanniana* (Scacchi, Phil.), γ=*lævigata* (Phil.); *philippii* (Weinkauff)= *plicata* of Philippi, not of Lamarck.

This arrangement differs somewhat from that proposed by

Mr. Jeffreys (see Record, vol. iv. p. 537), most of the inoperculate *Pleurotomæ* of the latter being placed in the genus *Raphitoma* by Weinkauff.

Pleurotoma carinata (Bivona). A living specimen was dredged at a depth of 120 fathoms in the Shetland Isles; eyes on prominent stalks. Jeffr. Ann. & Mag. Nat. Hist. ii. p. 298. *Pl. galerita* (Phil. as fossil) was dredged about fifty miles from Cape Wrath, at a depth of 189 fathoms, by Carpenter and Thomson, ibid. p. 449.

Bela demersa, sp. n., Tiberi, Journ. Conch. xvi. p. 179, Mediterranean, near Corsica, on coral-ground.

Clathurella pumila (Mighels as *Pleurotoma*)=*Pl. reticulata* (Garrett), and *Cl. tincta* (Reeve as *Pleurot.*)=*Pl. albifuniculata* (Reeve). Pease, Am. Journ. Conch. iv. p. 105.

Cythara (*Cithara*) *angiostoma*, new name for *Pleurotoma triticea* of Reeve, which is not that of Kiener, and *debilis*, new name for *dædalea* (Pease, 1867). Pease, Journ. Conch. iv. p. 105.

Daphnella magellanica, sp. n., Philippi, Mal. Blätt. xv. p. 223, Straits of Magellan.

Terebridæ.

Terebra lanceata (Kien.)=*venosa* (Hinds); *T. fimbriata* (Desh.) and *interlineata* (Reeve) are =*crenulata* (L.); *verreauxii*, *acumen*, *argenvillei*, and *matheroniana* (all of Desh.) are =*strigillata* (L.); *concinna* of Desh. not Dillw. =*divisa* (Pease); *inconstans* (Hinds)=*anomala* (Gray); and *puncticulata*, var. of Reeve=*peasei* (Desh.). Pease, Am. Journ. Conch. iv. pp. 123–125.

Cancellariidæ.

Cancellaria cancellata (L.). On its variations and mode of life, Weinkauff, Conch. d. Mittelm. ii. pp. 171–173.

Cancellaria souverbiei, sp. n., Crosse, Journ. Conch. xvi. p. 272, pl. 9. fig. 5, New Caledonia.

Rostrifera (*Tænioglossa*).

Xenophoridæ.

Xenophora mediterranea (Tiberi). Its distinctness from the well-known somewhat variable fossil *crispa* (König) is rather doubtful. Weinkauff, Conch. d. Mittelm. ii. p. 341.

Ovulidæ.

Amphiperas semistriata [*-um*], sp. n., Pease, Am. Journ. Conch. iv. p. 96, Ponape isl., Polynesia.

Ovula (*Simnia*) *nicæensis* and *purpurea* (Risso) are redescribed by Weinkauff, Conch. d. Mittelm. ii. pp. 5–6; the former found in Algeria.

Aporrhaidæ.

Gabb, in his "Attempt at a revision of the families Strombidæ and Aporrhaidæ," Am. Journ. Conch. iv. pp. 137–149, treats chiefly of the fossil forms and admits the following recent genera into this family:—

Subfam. APORRHAINÆ: *Aporrhais.*

Subfam. STRUTHIOLARINÆ: *Struthiolaria, Pelicaria, Halia.*

[*Halia* has been stated by Petit to belong to the Toxoglossa, and therefore cannot be included in this family.]

Aporrhais pes-pelecani. Lingual dentition by Hogg, Transact. Roy. Microscop. Soc. xvi. pl. 9. fig. 20.—Weinkauff (Conch. d. Mittelm. ii. pp. 148–153) rejects the name *Aporrhais* because (as he unjustly supposes) Da Costa did not use binominal nomenclature; therefore he names the species *Chenopus pes-pelecani*, and includes as synonym *pes-carbonis* (Brongn.), but considers *Ch. sorresianus* to be distinct. On the other hand, Gabb retains *Aporrhais* as a name used by Dillwyn in 1823. Am. Journ. Conch. iv. p. 144 and p. 139, footnote.

Arrhoges, new subgenus for *Aporrhais occidentalis.* Gabb, *l. c.* p. 145.

PEDICULARIIDÆ.

Pedicularia pacifica, sp. n., Pease, Am. Journ. Conch. iv. p. 96, pl. 11. figs. 17, 18, Apaian Isl., Polynesia.

CERITHIIDÆ.

Cerithium vulgatum (Brug.). On its numerous varieties, including *alucaster* (Brocchi) and *minutum* (Marcel de Serres), Weinkauff, Conch. d. Mittelm. ii. pp. 154–157.—*C. mediterraneum* (Desh.), its variations and distinctness from *dolium* (Brocchi), pp. 157–159 and 443, 444; *conicum* (Blainv.) =*mammillatum* of Philippi not of Risso, p. 159; *peloritanum* (Cantr., Kien.) =*lævigatum* (Phil.), p. 160; *scabrum* (Olivi)=*lima* (Lam.)=*reticulatum* of English authors, its varieties are said to include *elongatum* (Sow.), *angustum* (Desh.), *jadertinum* (Brusina), *metaxa* (Chiaje, Sow.), and *angustissimum* (Sow., Forbes), pp. 161–164; *elegans* (Blainv.)=*lacteum* (Phil.), p. 164; *crosseanum* (Tiberi) = *Cerithiopsis subcylindricus* (Brusina), p. 165.

Cerithium janellii and *musivum* (Hombr. et Jacq.) belong to *rugosum* (Wood), Pease, Am. Journ. Conch. iv. p. 127.

Triforis perversa (L.). On its variations, including *adversa* (Mont.), Weinkauff, *l. c.* pp. 167–169.

Triphoris bicolor is a new name for *alternatus* (Pease), which is preoccupied. Pease, Am. Journ. Conch. iv. p. 127.

MELANIIDÆ.

A. BROT has published "Additions and Corrections" to his Catalogue of this family (1862), the extent of which nearly equals that of the former publication. The systematic arrangement is about the same. The separation of the North-American Melaniidæ into a distinct family, Strepomatidæ, proposed by Stimpson (see Record, vol. ii. pp. 253–255), is not approved of (Introduct. pp. vi, vii). *Canidia* and *Clea* (H. Adams) are admitted as distinct genera, and placed between *Hemisinus* (Swains.) and *Melanopsis* (Fér.). The work contains a large stock of information concerning the specific distinctions or identities and systematic arrangement of a great number of species,

besides descriptions of several new or little-known ones, which will be mentioned subsequently.

Anculosa downiei, sp. n., Lea, Proc. Ac. Nat. Sc. Philad. 1868, p. 153, Alabama and Georgia.

Anculotus carinatus (Layard) is supposed by Brot (who had placed it in the genus *Paludomus*) to be a *Lithoglyphus*, p. 3.

Lithasia purpurea and *curta*, spp. nn., Lea, *l. c.* p. 153, Alabama.

Schizostoma wheatleyi, sp. n., Lea, *l. c.* p. 153, Coosa River.

Io (*Melania*) *spinosa* (Lea). Lingual membrane by Hogg, Transact. Roy. Microscop. Soc. xvi. pl. 8. fig. 1.

[*Goniobasis*] *Melania multilineata* (Say). Lingual membrane by Hogg, *l. c.* pl. 9. fig. 1.

Goniobasis wheatleyi, similis, sulcata, arata, gesnerii, tenebrosa, bifasciata, clathrata, pulchella, luteocella, connesaugaënsis, contigua, murrayensis, granatoides, clavula, cochliaris, venusta, and *ornata*, spp. nn., Lea, Proc. Ac. Nat. Sc. Philad. 1868, pp. 151, 152, Georgia and Alabama.

Trypanostoma unciforme, castaneum, wheatleyi, and *terebrale*, spp. nn., Lea, *l. c.* pp. 152, 153, Georgia and Alabama.

Pachychilus parvus (Lea, 1856)=*Melania crassilabrum* (Reeve)=*Paludomus cyanostomus* (Morelet, 1864), genus uncertain. Brot, p. 3.

Melania herculea (Gould). Three varieties described and figured by Brot, pp. 9, 10, pl. 3. figs. 1–3; *insoluta*, sp. n., p. 11, pl. 3. fig. 4, India?; *citrina*, sp. n., p. 11, pl. 3. fig. 13, Siam; *bernardi*, sp. n., p. 14, pl. 2. fig. 13, locality unknown; *fumosa* (Hinds), p. 15, pl. 2. fig. 12, Moluccas and New Ireland; *albescens* (Lea), with its varieties, p. 17; *petitii* (Phil.), p. 19, pl. 2. fig. 7, New Caledonia; *landaueri* (Brot), p. 21, pl. 2. figs 2, 3; *moricandi*, sp. n., p. 22, pl. 3. figs. 6, 7; *compressa*, sp. n., p. 23, pl. 3. fig. 5; *christobalensis*, sp. n., p. 24, pl. 2. fig. 1, S. Christobal, one of the Solomon Islands; *tuberculata* (Müll.), on its varieties and geographical distribution, p. 25; *nana* (Lea), p. 27, pl. 1. fig. 8, Negros; *granospira* (Mouss.), p. 27, pl. 1. fig. 10, Bali; *armillata* (Lea?), p. 28, pl. 1. fig. 12, Java; *celebensis* (Quoy and Gaimard), p. 29, pl. 1. fig. 13, Manado; *asperula*, sp. n., p. 30, pl. 1. fig. 11, Java?; *damonis*, sp. n., p. 31, pl. 1. fig. 9, Solomon Islands; *riquetii* (Grat.)=*harpula* (Dunker), but differing from *semicostata* (Phil.), p. 32; *rudis* (Lea), var., p. 33, pl. 1. fig. 7; *thiarella* (Lam.), p. 35, pl. 3. fig. 10; *spinulosa* (Lam.), redescribed, p. 38; *calcitrapa*, sp. n., p. 39, pl. 3. fig. 9; *corolla* (Gould) belongs to *Ammicola*, but the figure which Reeve gives for it represents some young *Melania*, p. 41; *amœna* (Morelet), its opercle has a concentric structure, it belongs either to *Paludomus* or *Vivipara*, p. 41; *zollingeri*, sp. n., p. 42, pl. 2. fig. 4, Java; *subaurita*, sp. n., p. 43, pl. 1. figs. 1–3, locality not known; *tessellata* (Lea), Gaboon, =*quadriseriata* (Gray)=*loricata* (Reeve), pp. 45–47, pl. 1. figs. 4, 5, this species, as well as *fusca* (Müll.), has some plaits in the interior of the whorls; *pisum*, sp. n., p. 54, pl. 2. fig. 5, Java?

Melania tuberculata (Müll.) was found in a little streamlet, which is almost always dry, near the larger port in Malta, in company with another African species, *Hydrobia musaënsis* (Frnfld.), by Issel, Bullett. Malacol. Ital. i. p. 23.

Hemisinus osculati (Villa), Brot, p. 51, Quito; *H. thermalis* (Titius), Brot, p. 52, Hungary.

Melanopsis obesa (Guirao, MS.), sp. n., Brot, p. 57, pl. 1. figs. 14, 15, Murcia in Spain; *M. faseolaria* (Parr.), sp. n., p. 58, pl. 2. fig. 10, Persepolis.

Melanopsis dufourii (Fér.), from Tuscany; the living animal described, and a variety, *carinata*, figured by Gentiluomo, Bullett. Malacol. Ital. i. pp. 96–98, pl. 6. figs. 10, 11.

Melanopsis penchinati, sp. n., Bourguignat, Moll. nouv. lit. fasc. ix. p. 293, pl. 40. figs. 1–4, or Revue et Mag. Zool. xx. p. 432, pl. 15. figs. 1–4, Aragon in Spain. [Intermediate between *cariosa* (L.) and *dufourii* (Fér.).]

Pirena aspera, sp. n., Brot, *l. c.* p. 49, locality not known.

Litorinidæ.

Litorina rudis (Mont.). Small and large specimens are found in copulation and at different seasons. P. Fischer, Journ. Conch. xvi. pp. 15–17.

Litorina. The Mediterranean species are, according to Weinkauff, *obtusata* (L.), Spain and Southern France, other localities doubtful; the name *littoralis* (L.) is judiciously rejected; *L. neritoides* (L.)=*cærulescens* (Lam.), common, high above the water; and *L. punctata* (Gmel.)=*syriaca* (Phil.), Spain, Algeria, Egypt, and Syria. The occurrence of *L. littorea* (L.) and *muricata* (L.) in the Mediterranean is very doubtful. Conch. d. Mittelm. ii. pp. 270–275.

Litorina pintado (Wood)=*ambigua* (Phil.)=*serialis* (Souleyet)=*tenebrata* (Nuttall, Reeve), and *L. ambigua* (Reeve)=*newcombii* (Reeve). Pease, Am. Journ. Conch. iv. p. 128.

Modulus cidaris (Reeve) and *candidus* (Petit) are varieties of *tectum* (Chemn.), Pease, *l. c.* p. 128.

Lacuna puteolus (Turt.) and *vincta* (Mont.). Lingual membranes by Hogg, Transact. Roy. Microscop. Soc. xvi. pl. 8. figs. 8 & 16.

Stenotis laxata (A. Adams), from Japan, figured Journ. Conch. xvi. pl. 4. fig. 7.

Fossarus. On the Mediterranean species see Weinkauff, Conch. d. Mittelm. ii. pp. 267–270.

Fossarus petitianus, sp. n., Crosse, Journ. Conch. xvi. p. 179, Naples, Sicily, Tarentum, and Dalmatia.

Fossar garrettii, new name for *Adeorbis costata* (Garrett), Pease, Am. Journ. Conch. iv. p. 128.

Planaxidæ.

Planaxis abbreviata [*-us*] (Pease, 1865) and *fasciata* [*-us*], sp. n., Pease, Am. Journ. Conch. iv. pp. 101, 102, pl. 12. figs. 16, 17, Tahiti and Paumotu Islands.

Litiopa. Descriptions and localities of some species are given by H. Knocker, Proc. Zool. Soc. 1868, pp. 615–622.

Rissoellidæ.

Jeffreysia glabra (Brown)=*diaphana* (Jeffr.). The first name is reestablished, as not preoccupied in this genus. Weinkauff, Conch. d. Mittelm. ii. p. 275.

Fairbankia, g. n. Feelers long, filiform; eyes, snout, and foot as in *Hydrobia*; shell with a thick epidermis and straight smooth columella; peristome outside thickened as in *Rissoa*; operculum horny, subannular, with excentric nucleus and an internal raised rib as in *Barleeia*.—*F. bombayana*, sp. n.,

Bombay Harbour, between tide-marks, on mud. Blanford, Ann. & Mag. Nat. Hist. ii. p. 400. *Irawadia* (Blanf.) differs by the whorls being deeply sulcated.

Rissoidæ.

Rissoina multicostata (Garrett)=*ambigua* (Gould), and *R. crassilabrum* (Garrett)=*tridentata* (Mich.). Pease, Am. Journ. Conch. iv. p. 128.

Rissoa membranacea (Adams). Lingual dentition by Hogg, Transact. Roy. Microscop. Soc. xvi. pl. 13. fig. 74. [The outer lateral plates are omitted.]

Rissoa. The Mediterranean species of the restricted genus *Rissoa* are arranged by Weinkauff according to the monograph by Schwartz v. Mohrenstern (see Zool. Record, vol. i. p. 211); those of *Alvania*, with the help of manuscripts of the same author, in the following manner:—*A. crenulata* (Mich.)=*cancellata* of English authors; *clathrata* (Phil.); *cimex* (L.)=*calathiscus* (Mont.)=*cancellata* (Desm.)=*europæa* (Risso); *brochii*, new name for *cimex*, of Philippi, p. 450; *cimicoides* (Forbes); *calathus* (Forb. & Hanl.); *beani* (Hanl.); *montagui* (Payr.); *schwarziana* (Brusina), perhaps a variety of the preceding; *scabra* (Phil.); *lincata* (Risso), also very near to *montagui*; *aspera* (Phil.); *rudis* (Phil.); *punctura* (Mont.); *lactea* (Mich.)=*cancellata* (Lam.?, Petit); *costata* (Adams)=*exigua* (Mich.)=*carinata* (Phil.); *mutabilis* (Schwartz), Dalmatia and Algeria; *dictyophora* (Phil.); *philippiana* (Jeffr.); *tessellata* (Schwartz), p. 311, Algeria; *weinkauffi* (Schwartz), p. 312, Algeria; *zetlandica* (Mont.); *cingulata* (Phil.); *tenera* (Phil.); *striatula* (Mont.)=*labiata* (Potiez & Mich.). Conch. d. Mittelm. ii. pp. 301–315.

Rissoa macandrewi, mirabilis, cristallinula, depicta, callosa, and *R.* (*Cingula*) *balteata*, *R.* (*Setia*) *perminima*, from the Canaries; *R.*? *coriacea*, from Madeira, spp. nn.. Manzoni, Journ. Conch. xvi. pp. 164–168, 237–244, pl. 10. figs. 1–8.—*R. calathus* (Forb. et Hanl.), var., thick, strongly sculptured, from the Canaries and Madeira, ibid. p. 251, pl. 10. fig. 9.—*R. macandrewi* forms, together with *costata* (Adams) and *zetlandica* (Mont.), and some tertiary species, a peculiar subdivision of the genus, characterized by the double peristome and a similar sculpture, ibid. pp. 254, 255.

Rissoa schythei, sp. n., Philippi, Mal. Blätt. xv. p. 225, perhaps from the Straits of Magellan.

Fenella pupoides (A. Adams), Japan, figured, Journ. Conch. xvi. pl. 4. fig. 5.

Scaliola bella (A. Adams), Japan, figured, ibid., fig. 6.

Nevillia, g. n. Testa imperforata, acuto-ovata, anfractibus convexis, spiraliter liratis, longitudinaliter striatis. Apertura ovalis, columella callosa et dente introrsum desinente munita; labro acuto, intus lævigato, extus varicoso. *N. picta* and *N. lucida*, spp. nn., Mauritius and Bourbon, H. Adams, Proc. Zool. Soc. 1868, p. 289, pl. 28. figs. 2 & 3.

Cingula (Flem.). Under this generic name Weinkauff enumerates the following Mediterranean species [neglecting the well-established genus *Hyala*]: *proxima* (Alder), *vitrea* (Mont.), *fulgida* (Adams)=*pygmæa* (Mich.), *glabrata* (Mhlfld.), *fusca* (Phil.), *contorta* (Jeffr.), *pulcherrima* (Jeffr.), *soluta* (Phil.), with some doubts concerning its identity with British specimens, *semistriata* (Mont.)=*subsulcata* (Phil.), *cingillus* (Mont.), *striata* (Mont.)=*minutissima* (Mich.).

[*Hydrobia*] *Litorina ulvæ*. Lingual membrane by Hogg, Transact. Microscop. Soc. xvi. pl. 8. fig. 3.

Amniola confusa (Frauenfeld), Moitessier, Hist. malac. du départ. de l'Hérault, pl. 1. figs. 15–17.

Hydrobia steinii (Martens) and *H. baltica* (Nilss.) fully described and figured by Lindström, Gotlands nutida Moll. pp. 28–36, pl. 3. figs. 2–9.

Hydrobia musaënsis (Frauenfeld) found in Malta. Issel, Bullett. Malacol. Ital. i. p. 22.

Hydrobia duveyrieri (Bourg. 1864) described and figured again from specimens taken in a thermal spring in Djerid (south of the regency of Tunis) by Bourguignat, Hist. malacol. Tunis, p. 33, pl. 1. figs. 38–40.

Hydrobia lapidum and *H. piscium* (Orb.), from freshwater streams in the province Rio Grande do Sul, *H. australis* (Orb.) in fresh and brackish water on the coast from Rio Janeiro to Montevideo, briefly described by Martens, Mal. Blätt. xv. pp. 192 & 202, 203; the median plate of the radula in the first with one, in the last with two or three basal teeth, Heynemann, ibid. p. 113.—*H. antarctia*, sp. n., Philippi, ibid. p. 224, Straits of Magellan, swimming in the sea.

Belgrandia, g. n., Bourguignat, Catalogue des mollusques terrestres et fluviatiles recueillies en état fossile dans les parties inférieures du diluvium des environs de Paris, 1868, pp. 13–15. This genus, characterized by variciform swellings of the whorls, which are hollow inside, is established for fossil species, but must include also *Cyclostoma gibbum* (Drap.) and some other recent species, as is remarked by M. Paladilhe, Revue et Mag. de Zool. 1869, p. 284.

Bythinella obtusa (Lea), *Amnicola sayana* (Anth.), *orbiculata* (Lea), and *Pomatiopsis lustrica* (Say). Lewis does not agree with Binney as regards the determination and systematic place of these species; he refers *sayana* to *Pomatiopsis*, *lustrica* to *Amnicola*, and thinks *orbiculata* to be =*porata* (Say), Am. Journ. Conch. iv. pp. 60–62.

Paludinidæ.

J. Lewis has published critical notes on Binney's arrangement of North-American *Paludinæ* (see Zool. Record, iv. p. 544); they refer chiefly to the subgenus *Melantho*, Am. Journ. Conch. iv. pp. 57–60, and do not admit of being abstracted. He also states that *Melantho gibba* (Currier) is a local modification of *rufa*, treating of the specific characters in this subgenus generally, pp. 82–85. About two per cent. of the young of *Melantho* are reversed, pp. 133–136.

Paludina decisa (Say) and *P. viripara* (L.). Lingual membranes by Hogg, Transact. Roy. Microscop. Soc. xvi. pl. 8. figs. 6 & 7.

Paludina bulimoides (Olivier) found by Dr. Welwitsch in saline water of a streamlet at Dungo in Angola, on *Ruppia maritima*. Morelet, Moll. terr. et fluv. Voy. Welwitsch, p. 96.

Bythinia. G. Lindström thinks that this genus must be removed from the *Paludinidæ* and associated with *Hydrobia* in the Rissoidæ on account of its lingual dentition, the situation of the generative organs, the ovoparity, and the power of suspending themselves by a mucous thread: he describes and figures the living animal of *B. tentaculata* (L.) and *B. leachii* (Shepp.), as

well as their lingual dentition. Gotlands nutida mollusker, pp. 26–28, pl. figs. 9–13, and pl. 3. fig. 1.

Bithinia tentaculata (L.). Lingual membrane by Hogg, Transact. Roy. Microscop. Soc. xvi. pl. 8. fig. 2.

Bithynia thermalis (L.)=*saviana* (Issel) figured by Gentiluomo, Bullett. Malacol. Ital. i. pl. 1. figs. 4–6; *B. etrusca* (Paladilhe) described, ibid. p. 95; *B. isselii*, sp. n., Gentiluomo, ibid. p. 95, pl. 6. fig. 8, Baths of Lucca.

Valvatidæ.

Valvata cristata (Müll.). Lingual membrane and mandible or buccal plate by Hogg, Transact. Roy. Microscop. Soc. xvi. pl. 8. figs. 9 & 10.

Ampullariidæ.

Ampullaria urceus (Müll.) and *effusa*? (Müll.). Lingual dentition, by Hogg, Transact. Roy. Microscop. Soc. xvi. pl. 9. figs. 23 & 24 [subgenera *Pomus* (Humphr.) and *Marisa* (Gray)].

Ampullaria ovata, var., in the river Niger, Morelet, Moll. terr. et fluv. Voy. Welwitsch, p. 94, pl. 9. fig. 10. [Probably *A. wernei*, Phil.]

[*Lanistes*] *Ampullaria ovum* (Peters) in several lakes of Angola, variable in form. Morelet, *l. c.* p. 95.

Turritellidæ.

Turritella communis (Risso)=*terebra* of former authors, not Linné,=*cornea* of Kiener, but not of Lamarck. Weinkauff, Conch. d. Mittelm. ii. pp. 318–321.

Turritella lactea (Möller)=*reticulata* (Mighels). Operculum with nine narrow circumvolutions; cannot be referred to *Mesalia*. Mörch, Am. Journ. Conch. iv. p. 46.

Mesalia brevialis (Lam.) has a corneous, deeply concave operculum with very broad circumvolutions. Mörch, ibid. p. 46.

Mesalia brevialis (Lam.), Gibraltar and Algesiras, and *M. subdecussata* (Cantraine as *Scalaria*)=*striata* (M'Andr.), probably also =*Turritella cancellata* (Risso), Spain and Sardinia. Weinkauff, *l. c.* pp. 322, 323.

Cæcidæ.

Cæcum gracile, vitreum, dextroversum, clarkii, ? *mamillatum, Brochina glabriformis* and *glabella*, found in Japan. A. Adams, Ann. & Mag. Nat. Hist. ii. pp. 364, 365.

Vermetidæ.

Vermetus. On the Mediterranean species and their synonymy see Weinkauff, Conchyl. d. Mettelm. pp. 325–328.

Calyptræidæ.

Calyptræa sinensis (L.). Lingual dentition by Hogg. Transact. Roy. Microscop. Soc. xvi. pl. 13. fig. 73.

Calyptræa sacchari-meta (Reeve) is the young state of *cicatricosa* (Reeve), Pease, Am. Journ. Conch. iv. p. 128.

Crepidula moulinsi (Mich.)=*gibbosa* of the authors on Mediterranean shells, but distinct from the miocene *gibbosa* (Defrance). Weinkauff, Conch. d. Mittelm. ii. pp. 336, 337.

Capulidæ.

[*Capulus*] *Pileopsis hungarica.* Lingual membrane by Hogg, Transact. Roy. Microscop. Soc. xvi. pl. 8. fig. 13.

Capulus hungaricus (L.) in Algeria, rather large; *C. militaris* (L.) very doubtful as Mediterranean. Weinkauff, Conch. d. Mittelm. ii. pp. 337–339.

SCUTIBRANCHIATA.

Podophthalma.

Neritidæ.

Nerita albicilla (L.) and *mauri* [*maura* (Récluz)?]. Lingual dentition by Hogg, Transact. Roy. Microscop. Soc. xvi. pl. 11. figs. 53 & 55.

Nerita insculpta (Reeve)=*picea* (Récl.), and *N. musiva* (Gould)=*signata* (Lam.). Pease, Am. Journ. Conch. iv. pp. 128, 129.

"*Neritina zebra*, Brit." Lingual dentition by Hogg, Transact. Roy. Microscop. Soc. xvi. pl. 11. fig. 52. [Is this the exotic *zebra* (Lam.), or the British *fluviatilis* (L.)?] *N. communis* (Q. & G.), ibid. fig. 54.

Neritina viridis in the Mediterranean, in the sea far from rivers, as well as in the mouths of rivers in company with freshwater Neritinæ; really identical with specimens from the West Indies. Weinkauff, Conch. d. Mittelm. ii. p. 341.

Neritina afra (Sow.) at Loanda, and *N. æquinoctialis* (Morelet) in the river Lifune, Angola, found by Dr. Welwitsch. Morelet, Moll. terr. et fluv. Voy. Welwitsch, p. 96.

Neritina nuttallii (Récluz)=*sandwichensis* (Phil. not Desh.)=*lugubris* (Phil.) =*solidissima* (Sow.)=*alata* (Sow.)=*cariosa* (Gray, Reeve); *N. dilatata* (Brod.)=*florida* (Récl.); *reticulata* (Sow.)=*desmoulinsiana* (Récl.); *tahitensis* (Less.)=*lamarckii* (Desh.)=*auriculata* (Sow. non Lam.); *vespertina* (Nuttall)=*lamarckii* (Gould); *deshayesii*, new name for *sandwichensis* (Desh.); *chrysocolla* (Gould)=*navigatoria* (Reeve). Pease, Am. Journ. Conch. iv. pp. 129–131.

Trochidæ.

Phasianella australis (Gm.) and *pullo* (L.). Lingual dentition by Hogg, Transact. Roy. Microscop. Soc. xvi. pl. 11. figs. 45 & 47.

Phasianella. On the Mediterranean species, their synonymy and variations, see Weinkauff, Conch. d. Mittelm. ii. pp. 342–344.

Alcyna ocellata (A. Adams), Japan, figured, Journ. Conch. xvi. pl. 4. fig. 8. Crosse properly directs attention to its affinity with *Phasianella*, ibid. p. 43, footnote.

Turbo australica (?) and *rubicundus* (Reeve). Lingual dentition by Hogg, Transact. Roy. Microscop. Soc. xvi. pl. 11. figs. 50 & 51.

Turbo macandrewi is a new name for *cælatus* (A. Adams), placed by its author in *Omphalius*, but having a calcareous operculum, from Mogador. Mörch, Am. Journ. Conch. iv. p. 46.

Collonia maculosa (Pease, 1866, as *Euchelus*), *picta*, sp. n., and *granulosa*, sp. n., Pease, Am. Journ. Conch. iv. pp. 91, 92, pl. 11. figs. 1, 2, 3 & 4; the two first from the Paumotu Islands, the last from Ponape.

Imperator imperialis (Gm.). Lingual dentition by Hogg, Transact. Roy. Microscop. Soc. xvi. pl. 11. fig. 46.

Cyclostrema nevilli and *C.* (*Daronia*) *subdisjuncta*, spp. nn., H. Adams, Proc. Zool. Soc. 1868, p. 293, pl. 28. figs. 17 & 18, Ceylon.

Adeorbis costatus (Danilo and Sandri as *Delphinula*, Brusina as *Cyclostrema*), Weinkauff, Conch. d. Mittelm. ii. p. 264.

Trochus crassus (Da Costa) and *fragarioides* (Lam.). Lingual dentition by Hogg, Transact. Roy. Microscop. Soc. xvi. pl. 11. figs. 48 & 49.

Trochus. The Mediterranean species are enumerated by Weinkauff, *l. c.* ii. pp. 353–384, as follows:—

I. Monodonta, Lam. part.: *turbinatus* (Born)=*tessellatus* (Born)=*fragarioides* (Lam.); *articulatus* (Lam.)=*draparnaudii* (Payr.).

II. Zizyphinus: *conulus* (L.) [this is the only species having the colour of the fruit of *Zizyphus*, trochus colore zizyphino (Gualtieri), and therefore ought to bear the name of *zizyphinus*]; *zizyphinus* (L.)=*conuloides* (Lam.), with varr. *lævis*, *carinata*, and *cingulata*; *cingulatus* (Brocchi); *gualtierii* [Phil.]=*lævigatus* (Phil.); *laugieri* (Payr.)=*violaceus* (Risso); *unidentatus* (Phil.); *striatus* (L.)=*depictus* (Desh.), with var. *elongata*=*gravesi* (Forbes); *exiguus* (Pult.)=*crenulatus* (Brocchi), with var. *pyramidata*; *montacuti* (Wood); *ruscurianus* (Weinkauff), only in Algeria and perhaps Tunis; *strigosus* (Gmel.), Marocco; *miliaris* (Brocchi), rare; *granulatus*, Born=*papillosus* (Da Costa); *millegranus* (Phil.); *pumilio* (Phil.).

III. Gibbula: *leucophæus* (Phil.); *tumidus* (Mont.)=*raketti* (Payr.); *adansoni* (Payr.), with var. β. *adriaticus* (Phil.) and γ. *helicoides* (Phil.); *villicus* (Phil.); *nebulosus* (Phil.), rather doubtful; *zonatus* (Jeffr.); *duminyi* (Requien), its place in this genus has been ascertained by examining the operculum; *varius* (L.)=*roissyi* (Payr.)=*Gibb. gibbosula* and *purpurata* (Brusina); *richardi* (Payr.)=*Phorcus margaritaceus* (Risso); *umbilicaris* (L.); *fermoni* (Payr.)=*canaliculatus* (Phil. non Lam.), perhaps=*ardens* (Salis); *saulcii* (Orb.), Algeria; *albidus* (Gmel.)=*biasoletti* (Phil.); *magus* (L.); *famulum* (Gmel.); *guttadauri* (Phil.); *divaricatus* (L.), with var. *rarilineatus* (Mich.); *pygmæus* (Phil.).

Trochus verruca (Gould)=*Leptonyx rubricinctus* (Migh.); *Trochus tantillus* (Gould)=*Margarita angulata* (A. Ad.)=*Tr. diminutivus* (Reeve), belongs probably to *Littorinidæ*; *Tr. atropurpureus* (Gould)=*Clanculus nodiliratus* (A. Ad.); *Tr. metallicus* (Reeve)=*intextus* (Kien.)=*sandwichensis* (Soul.). Pease, Am. Journ. Conch. iv. p. 131.

Clanculus cruciatus (L.)=*Monodonta vieilloti* (Payr.)=*Mon. araonis* (Basterot, fossil), Weinkauff, *l. c.* pp. 350, 351.—*Cl. jussieui* (Payr.), a variety with more conspicuous spiral girdles, not concealed by the epidermis, is *Mon. glomus* (Phil.); there are even specimens intermediate between these two and *cruciatus*, ibid. p. 352.

Margarita grœnlandica (Beck). Lingual dentition by Hogg, Transact. Roy. Microscop. Soc. xvi. pl. 12. fig. 60.

Stomatella imbricata (Lam.). Lingual dentition by Hogg, *l. c.* pl. 13. fig. 83.

Stomatia variegata, sp. n., H. Adams, Proc. Zool. Soc. 1868, p. 12, pl. 4. fig. 1, Mauritius.

Scutellina compressa, sp. n., Pease, Am. Journ. Conch. iv. p. 99, pl. 11. figs. 25–27, Tahiti.—*Sc. granocostata* and *aculeata*, spp. nn., Pease, *l. c.* p. 100, Hawaii.

Scissurella. The Mediterranean species are:—*lævigata* (Orb.)=*Delphinula calcaroides* (Cantr.); *costata* (Orb.)=*plicata* (Phil.); *crispata* (Flem.)=*aspera* (Phil.); *cancellata* (Jeffr.); further, *Schismope elegans* (Orb. as *Scissurella*)=*Sciss. striatula* (Phil.). Weinkauff, *l. c.* pp. 385, 386.

Haliotus tuberculata (L.). Only this species lives in the Mediterranean, the so-called *lamellosa*, *glabra*, *marmorata*, &c. being varieties. Weinkauff, *l. c.* p. 387.—The radula is figured by Hogg, Transact. Roy. Microscop. Soc. xvi. pl. 11. fig. 56.

Edriophthalma.

Fissurellidæ.

Fissurella reticulata (Donov.) and "*magella*" [perhaps *picta* from Magellan Straits]. Lingual dentition by Hogg, Transact. Roy. Microscop. Soc. xvi. pl. 12. figs. 58, 59.

Fissurella. The Mediterranean species are the following:—*F. costaria* (Basterot)=*neglecta* (Desh.)=*mediterranea* (Sow.); *græca* (L.) distinct from the British *reticulata* (Donov.); *nubecula* (L.)=*rosea* (Gmel., Lam., Phil.); *gibberula* (Lam.)=*gibba* (Phil.). Weinkauff, Conch. d. Mittelm. ii. pp. 390–395.

Emarginula (Lam.). The Mediterranean species are, according to Weinkauff, *l. c.* pp. 395–400, the following:—*fissura* (L.)=*solidula* (Phil.); *conica* (Schumacher)=*rubra* (Lam.)=*rosea* (Bell)=*pileolus* (Mich.); *huzardi* (Payr.)=*cusmichiana* (Brusina); *cancellata* (Phil.); *elongata* (Costa).

Emarginula clathrata, sp. n., Pease, Am. Journ. Conch. iv. p. 99, pl. 11. fig. 24, Howland Isl., Polynesia.

Parmophorus australis (Lam.). Lingual dentition by Hogg, Transact. Roy. Microscop. Soc. xvi. pl. 12. fig. 57.

CYCLOBRANCHIATA.

Dr. Ed. Brandt has examined and compared the nervous systems of *Patella vulgata* and *Chiton* (*Acanthochites*) *fascicularis*. In the former there are three pairs of ganglia communicating with one another by commissures, and forming the central parts of the nervous system, viz. the ganglia cerebralia, the ganglia visceralia sive branchialia, and the ganglia pedalia. In *Chiton* the branchial and pedal ganglia are united on each side into one (pedobranchiale), as is proved by the nerves, and the cerebralia are absent altogether, as the animal has not either eyes or tentacles, which organs are provided in other mollusks with nerves coming from the ganglion cerebrale; but there is a very strong anterior commissure between the two ganglia pedobranchialia, giving origin to labial and pharyngeal nerves, and this commissure has been regarded as a cerebral ganglion by Middendorff. The branchial nerve is very strong

and simple on each side in *Chiton*; but in *Patella* it is slender, and near its origin divided into two almost equal branches, a true branchial and a muscular. The arrangement of the anterior upper, the posterior upper, and the under pharyngeal ganglions, with their commissures, is quite similar in both genera; but in *Chiton* there is one additional pair, which may be called the anterior under pharyngeal ganglion, situated on a large arched vascular trunk in the hind part of the neck. The author thinks that the results of his researches favour the idea of a real affinity between *Chiton* and *Patella*, and that there is no fundamental difference in *Chiton* from the other mollusks. Bull. Ac. Sc. St. Pétersb. xiii. pp. 457–466, with figures.

Tecturidæ.

Tectura virginea (Müll.) at Algiers; *Pat. gussoni* (Costa) may be the same species. Weinkauff, Conch. d. Mittelm. ii. p. 406.

Tectura tahitensis, sp. n., Tahiti, and *conoidalis*, sp. n., Roratonga isl., Polynesia. Pease, Am. Journ. Conch. iv. p. 98, pl. 11. figs. 21, 22.

Acmæa schrenckii, sp. n.,=*Patella granostriata* of Schrenck, not Reeve, Lischke, Mal. Blätt. xv. p. 220, Nagasaki.

Gadiniidæ.

Gadinia garnoti (Payr.). Weinkauff states that this is not Linné's *Patella mammillaris*, as its sculpture is decussate, not simply striate. Conch. d. Mittelm. ii. p. 176.

Patellidæ.

Patella spinosa (?), *guttata* (Orb.), *crenata* (Gmel.), *radiata* (?), and *denticulata* (Martyn?). Lingual dentition, by Hogg, Transact. Roy. Microscop. Soc. xvi. pl. 12. figs. 66, 68, 69, 70, and 71; *Patella pellucida* (L.), fig. 67.

Patella. The Mediterranean species, with their synonymy and varieties, are enumerated by Weinkauff, Conchyl. d. Mittelm. ii. pp. 401-406. The true *P. vulgata* does not occur in the Mediterranean.

Patella? *emarginuloides*, sp. n., Philippi, Mal. Blätt. xv. p. 224, Straits of Magellan. Gills could not be found.

Lepeta cæca (Müll.). Lingual dentition by Hogg, Transact. Roy. Microscop. Soc. xvi. pl. 12. fig. 72.

Chiton. J. Reincke has made researches into the development of the spines in the edge of the mantle. Siebold u. Kölliker's Zeitschr. xviii. pp. 305–321, pls. 21, 22.

Chiton fulvus (Wood), *cinereus* (L.), *piceus* (Gmel.), *echinatus* (Barnes), and *undulatus* (Q. & G.?). Lingual dentition by Hogg, Transact. Roy. Microscop. Soc. xvi. pl. xii. figs. 61–65.

TECTIBRANCHIATA.

Tornatellidæ.

Ringicula buccinea (Renieri)=*auriculata* (Ménard), Weinkauff, Conch. d. Mittelm. ii. p. 205.

Bullidæ.

Mr. Sowerby's Continuation of Reeve's Conchologia Iconica contains, in parts 268–273, six plates for the genus *Bulla*, five for *Haminea*, two for *Hydatina*, and one for *Atys*.

Bulla scripta (Garrett) = *Hydatina guamensis* (Quoy), Pease, Am. Journ. Conch. iv. p. 132.

Cylichna (Lovén). The Mediterranean species are arranged as follows by Weinkauff, Conch. d. Mittelm. ii. pp. 194–201:—*cylindracea* (Penn.)=*convoluta* (Scacchi); *truncata* (Mont.); *hörnesi* (Weinkauff), Algiers, in 8–20 fathoms; *umbilicata* (Mont.), including as variety *strigella* (Lovén),=*truncatula* of Philippi and others, not of Bruguière; *jeffreysi* (Weinkauff)=*ovulata* of Jeffreys, from Piedmont, not of Brocchi; *brocchii* (Michelotti)=*ovulata* of Brocchi and Philippi, not of Lamarck; *mammillata* (Phil.); *C. fragilis* (Jeffr.) is placed by Weinkauff in the genus *Cylindrobulla* (Fischer), ibid. p. 185.

Cylichna cuneata, sp. n., Tiberi, Journ. Conch. xvi. p. 180, Naples.

Akera bullata (Müll.), the Adriatic variety=*Bulla elastica* (Sandri), Weinkauff, *l. c.* p. 185. [This is *Bulla canaliculata* of Olivi, which is omitted by the author.]

Bulla striata (Brug.)=*columnæ* (Chiaje)=*omphalodes* and *amygdala* (Menke). In the Mediterranean there is only one species of this group. Weinkauff, pp. 191, 192.

Bulla tenuissima and *B. trifasciata*, spp. nn., Sowerby in Reeve's Conch. Ic., from Swan River and the Philippines.

[*Haminea*] *Bulla hydatis*. Its lingual dentition figured by Hogg, Trans. R. Microsc. Soc. xvi. pl. 13. fig. 78.

Haminea. Sowerby (*l. c.*) describes the following new species:—*H. obesa*, from New Zealand, pt. 271; *H. guadaloupensis*, *sandvichensis*, and *natalensis*, pt. 272 [is the last distinct from *B. natalensis*, Krauss?]; and *H. novæ eboracæ*, ibid. (which is=*insculpta* (Totten), according to Tryon, Am. Journ. Conch. iv. p. 283).

Haminea nigropunctata, *ovalis*, *simillima*, and *aperta*, spp. nn., Pease, Am. Journ. Conch. iv. pp. 71, 72, pls. 1–3; the first from Raiatea, the others from Tahiti; the last not figured.

Scaphander lignarius. Lingual dentition by Hogg, Transact. Roy. Microscopical Soc. xvi. pl. 10. fig. 44.

Cryptophthalmus cylindricus (Pease). The living animal described and figured by Pease, Am. Journ. Conch. iv. p. 74, pl. 7. fig. 7.

Philine aperta (L.). Lingual dentition by Hogg, *l. c.* pl. 13. fig. 77.

Lophocercidæ.

Volvatella (Pease, 1860). The shell resembles that of *Lophocercus*, but is more convolute; foot small, mantle concealed, vent posterior, eyes concealed in the fold of the sides of the head. *V. fragilis* (Pease), *pyriformis* from Huaheine, and *candida*, spp. nn., Pease, Am. Journ. Conch. iv. p. 73, pl. 7. figs. 4–6. [The author does not mention the situation of the genital organs, which forms the chief difference between *Lophocercidæ* and *Bullidæ*.]

Lophocercus viridis, sp. n., Pease, *l. c.* p. 74, pl. 8. figs. 1, 2, Huaheine.

Lobiger pictus, sp. n., Pease, *l. c.* p. 75, pl. 8. fig. 3, Huaheine.

APLYSIIDÆ.

The coloured fluid ejected by *Aplysia depilans* (L.) shows the same chemical reactions as aniline-red and aniline-violet. Ziegler, Bulletin de la Société industrielle de Mulhouse, 1867, and Journal für praktische Chemie, 1868, January.

Dolabrifera fusca and *tahitensis*, spp. nn., Pease, Am. Journ. Conch. iv. pp. 76, 77, pl. 8. figs. 4 & 5, Tahiti.

Aplysia, sp. indeterm., from Vigo Bay, and *A. hybrida* (Sow.). Lingual dentition figured by Hogg, Trans. Roy. Microscop. Soc. xvi. pl. 10. figs. 41, 42; jaw, fig. 42 *a*.

Syphonota viridescens, Kingsmill Islands, and *punctata*, Huaheine, spp. nn., Pease, *l. c.* p. 77, pl. 10. fig. 1, & pl. 9. fig. 2.

Umbrella mediterranea (Lam.), *lamarckiana* (Récluz), and *indica* (Lam.), Küster, Conch. sect. 55. pp. 3–5, pl. 1. figs. 1–4, 5, 6, & 7.

PLEUROBRANCHIDÆ.

Pleurobranchæa meckelii (Leue), *Pleurobranchus testudinarius* (Cantr.), and *tuberculatus* (Meckel) secrete free sulphuric acid. The organ for this secretion is that which has been called by previous anatomists "arboriform" or "accessory" salivary gland: it is of tubular structure; and its branches extend far into the visceral cavity of the animal, embracing the stomach, and opening in the upper commissure of the mouth, whilst the true salivary glands, called "semiorbicular gland" by Leue, and "pancreas" by Delle Chiaje, open between the jaws. The fluid is expelled when the animal tries to bite, colouring the surrounding water reddish, if it has been previously mixed with litmus; but the acid does not appear to be swallowed, as calcareous particles contained in the food (for example, crystals of the skin of some Tunicates) are found intact in the stomach of the animal. Panceri, Ann. Sci. Nat. vol. x. pp. 92–94.

Pleurobranchus plumula (Mont.). Lingual dentition and jaw by Hogg, Transact. Roy. Microscop. Soc. xvi. pl. 13. fig. 79.

Pleurobranchus grandis, Huaheine, *ovalis*, Tahiti, *delicatus*, Huaheine, and *tessellatus*, locality ?, spp. nn. Pease, Am. Journ. Conch. iv. pp. 78–80, pl. 10. fig. 2. pl. 9. figs. 3, 1, 4.

NUDIBRANCHIATA.

PHYLLIDIIDÆ.

Phyllidia nigra, sp. n., Pease, Am. Journ. Conch. iv. p. 80, pl. 9. fig. 5, Tahiti.

DORIDIDÆ.

Oncidoris bilamellata (L.). Lingual dentition by Hogg, Transact. Roy. Microscop. Soc. xvi. pl. 10. fig. 43.

Tritoniidæ.

Tritonia hombergii (Cuv.). Lingual dentition by Hogg, Transact. Roy. Microscop. Soc. xvi. pl. 13. fig. 80.

Dendronotus arborescens (Müll.). Lingual dentition by Hogg, *l. c.* pl. 10. fig. 39.

Bornella digitata (Ad. et Rv.) found near Aden. Collingwood, Ann. & Mag. Nat. Hist. i. p. 91.

Æolidiidæ.

Æolis papillosa. Lingual dentition by Hogg, *l. c.* fig. 40.

Phidiana lynceus. R. Bergh's monograph, mentioned in Zoological Record, vol. iv. pp. 489 & 555, is translated in Ann. & Mag. Nat. Hist. vol. ii. pp. 133–138, pl. 1.

PULMONATA INOPERCULATA.

Geophila.

Dr. L. Pfeiffer has published volumes V. and VI. of his excellent monograph of *Heliceæ*, the subject being treated in the same manner as in the previous volumes. Original diagnoses are given of the species known to the author from autopsy; with regard to those not seen by him (and we regret to say their number is large) the descriptions given by their authors are reproduced without alteration; also new descriptions by other conchologists, given for species described in the previous volumes, are reproduced in notes, so that the student may as far as possible be informed of every advance and difference of opinion. The literature published since the issue of the fourth volume (1859) is added to each species, very conscientiously and nearly completely, only a few malacological works not having been accessible to the author. The systematic arrangement is essentially the same as in the previous volumes; only the two genera *Testacella* (Cuv.) and *Gæotis* (Shuttl.) have been added. The genera *Helix* and *Bulimus* are maintained in too wide a sense, notwithstanding the differences in jaw and radula pointed out by various authors; but the natural groups or genera to which the several species have been referred (especially in the second edition of Albers's 'Heliceen') are indicated by quotations.

Vol. V. contains:—*Testacella*, 10 sp.; *Daudebardia*, 11 sp.; *Gæotis*, 3 sp.; *Vitrina*, 105 sp.; *Simpulopsis*, 18 sp.; *Succinea*, 177 sp.; *Physella* (Pfr. = *Strebelia*, Crosse), 1 sp.; *Helix*, 2905 sp. arranged under 136 paragraphs, the chief divisions being taken from the peristome; *Boysia* (Pfr.), 1 sp.; *Plectostoma* (A. Adams), 1 sp. [this genus is now known to be operculated, and consequently does not belong to this family]; *Hypselostoma*, 2 sp.; *Anostoma*, 5 sp.; *Tomigerus*, 5 sp.; *Streptaxis*, 67 sp.; *Ennea*, 39 sp.; *Streptostele*, 4 sp.

Vol. VI. contains :—*Bulimus*, 1315 sp., arranged under 66 paragraphs, the chief divisions being taken from the peristome; *Partula*, 70 sp.; *Achatinella*, 230 sp.; *Columna*, 3 sp.; *Spiraxis*, 83 sp.; *Orthalicus* (Beck), 27 sp.; *Perideris*, 19 sp.; *Pseudachatina*, 7 sp.; *Limicolaria*, 28 sp.; *Achatina* (including *Cæcilianella* and *Subulina*), 230 sp., arranged under 9 paragraphs; *Geostilbia* (Crosse), 1 sp.; *Ferussacia* including *Zua* (Leach), 33 sp.; *Azeca*, 21 sp.; *Tornatellina*, 41 sp.; *Oleacina*, 130 sp.; *Pupa*, 312 sp., under 24 paragraphs; *Zospeum*, 10 sp.; *Pineria* (Poey), 4 sp.; *Macroceramus* (Guilding), 48 sp.; *Cylindrella*, 224 sp., arranged under 16 paragraphs; *Megaspira*, 2 sp.; *Balea* (Prideaux), 22 sp.; *Clausilia* (Drap.), 563 sp., arranged under 46 paragraphs.

The Scandinavian slugs, which are nearly the same as in Middle and the rest of Northern Europe, are fully described and illustrated by A. W. Malm in a monograph published in the Memoirs of the Scientific Society of Göteborg, Sweden (see above, p. 427). The entire animal, as well as the lingual teeth, is well figured. The author goes rather far in splitting genera.

E. T. Newton has published a great number of observations on specific differences in the genital organs of various British species of *Arion*, *Limax*, and *Helix*, and in the arrangement of their muscles. Observations by Prof. Busk on the microscopical contents of various glands belonging to the genital system are added. Transact. Roy. Microscop. Soc. xii. pp. 26–31.

Stoliczka has counted about 46 pulsations per minute in *Nanina pollux*, and 50 in *Helix propinqua*. They are much less frequent after the animal has retired into its shell, only about 17 in the latter species. Proc. As. Soc. Bengal, 1868, p. 263.

Viviparous species are *Conulus vacans* and *Tornatellina lamellata*, Guppy, Ann. & Mag. Nat. Hist. i. pp. 435 & 437.

Hibernation. *Limax agrestis*, *tenellus*, *Vitrina pellucida*, *Zonites fulvus*, *hammonis*, *Helix pulchella*, *hispida*, *Arion hortensis*, *Bulimus obscurus*, *Pupa arenacea*, *muscorum*, *Clausilia laminata*, and *Balea perversa* found in activity during the winter, January 1864–65; *Limax agrestis*, *Vitrina pellucida*, *Arion hortensis*, *Helix hispida* and *pulchella* were the first which made their appearance in April 1865, in the island of Gotland. Lindström, Gotlands nutida Mollusker, p. 40.

Vaginulidæ.

Veronicella myrmecophila, sp. n., Heynemann, Mal. Blätt. xv. p. 37, pl. 1. fig. 2, Prince Island, in the Gulf of Guinea.—*V. langsdorfi* (Fér. ?), the teeth of the radula described and figured by the same, ibid. p. 100, pl. 4. fig. 1.—*Veronicella* (*Vaginulus*) *sloanei* (Fér.), lingual teeth, Guppy, Transact. Linn. Soc. xxvi. p. 193, different from those of *Onchidium*.—*Vaginulus langsdorfi* (Fér.) found at Porto Alegre by Dr. Hensel; lingual teeth described by F. D. Heynemann, *l. c.* p. 101, pl. 4. fig. 1.—*V. tuberculosus*, sp. n., Martens, ibid. p. 174, province Rio Grande do Sul.—*V. bonariensis*, sp. n., Strobel, Atti Soc.

Ital. Sci. Nat. xi. p. 550, with a woodcut, Buenos Ayres.—*V. plebejus*, sp. n., P. Fischer, Journ. Conch. xvi. p. 145, New Caledonia.

Agnatha (Testacellea and Glandinea).

Testacella maugei (Fér.). Lingual dentition by Hogg, Transact. Roy. Microscop. Soc. xvi. pl. 13. fig. 82. A median tooth is represented, but somewhat indistinct.

Testacella beccarii, sp. n., Issel, Bullett. Malacol. Ital. p. 71, pl. 6. figs. 1–4, and *T. pecchiolii* (Bourguignat, 1861), ibid. pl. 6. fig. 5, Tuscany.

Strebelia. This name is proposed by H. Crosse and P. Fischer for *Physella*, which is preoccupied. It is a genus of land-shells described by Dr. Pfeiffer, Mal. Blätt. 1851, from Mexico. Journ. Conch. xvi. p. 90.

Glandina algira (Brug.). The lingual teeth described by Crosse & Fischer, Journ. Conch. xvi. p. 234, translated in Bullett. Malacol. Ital. i. p. 64. A median tooth is present; in *Daudebardia sicula* (Benoit) it could not be found; in both the points of the lateral teeth are simple, in *Testacella* provided with a little hook on the outer side.

Glandina truncata (Gmel.). Lingual dentition by Hogg, *l. c.* pl. 13. fig. 81; a median tooth is represented.

Glandina perlucens, sp. n., Guppy, Ann. & Mag. Nat. Hist. i. p. 430, Dominica.—*G. minutissima*, sp. n., Guppy, Proceed. Scientif. Assoc. Trinidad, 1868, p. 239, Trinidad.

Spiraxis tenuis, sp. n., Pfeiffer, Mal. Blätt. xv. p. 84, Mexico.—*S. simplex*, sp. n., Guppy, Ann. & Mag. Nat. Hist. i. p. 438, and Proceed. Scientif. Assoc. Trinidad, 1868, p. 238, Trinidad.

Streptaxis apertus, sp. n., with two varieties, *subglobosus* and *depressus*, inland region of Rio Grande do Sul, Martens, Mal. Blätt. xv. p. 180. Jaw none, lingual teeth slender, acuminate, without hooks, as in the other *Testacellea* or *Agnatha*: Heynemann, ibid. p. 101, pl. 4. fig. 2. Several species described as *Helix* by d'Orbigny are believed to belong to this genus by Martens, *l. c.* p. 182.—*Str. welwitschi* and *Str. turbinatus*, spp. nn., and *Str. troberti* (Petit), Morelet, Moll. terr. et fluv. Voy. Welwitsch, pp. 57, 58, pl. 1. figs. 7, 6, 8, Angola, on very moist spots, near the banks of rivers and lakes; the two new species without teeth in the aperture, the second with subregular whorls.

The colours of a living *Streptaxis souleyetiana* (Petit) are described by Nevill, Proc. Zool. Soc. 1868, p. 260. Those of the American species are generally of vivid red or yellow, Martens, Mal. Blätt. xv. p. 182.

Ennea pupæformis, *ringicula*, and *vitrea*, spp. nn., in stony woods of Angola, the two first with toothed aperture, the last without teeth. Morelet, Moll. terr. et fluv. Voy. Welwitsch, pp. 82–84, pl. 2. figs. 6, 5, & 3.

Ennea (*Elma*) *nevilli*, sp. n., H. Adams, Proc. Zool. Soc. 1868, p. 291, pl. 28. fig. 12, Seychelle Islands.

Ennea (*Gulella*) *clavulata* (Lam.). Animal yellowish, with orange. Nevill, *l. c.* p. 260.

Gibbulina. The colours of living animals are described by Nevill, Proc. Zool. Soc. 1868, p. 258.

Gibbulina. Mr. H. Adams (Proc. Zool. Soc. 1868) describes the following new species:—*Gibbus* (*Gibbulina*) *mondraini*, *barclayi*, and *clavulus*, from Mauritius, pp. 13 & 16, pl. 4. figs. 5, 6, 7, & 13; *G.* (*G.*) *deshayesi* and *cylin-*

drellus, from Bourbon, pp. 290-291, pl. 28. figs. 9–11; *G. moreleti*, from the Seychelles, p. 291, pl. 28. fig. 10.

Cylindrella. See below, family Goniognatha.

Oxygnatha (Limacea and Vitrinea).

Limax. Ir. Malm (*l. c.*) arranges the Scandinavian species thus:—

1. *Eulimax.*

Subgenus *Heynemannia*, with two species, *cinereoniger* and *maximus*, including three varieties.

Subgenus *Plepticolimax*, with *flavus* (L.)=*variegatus* (Drap.).

2. *Malacolimax*, g. n., with *tenellus* (Nilss.)=*cinctus* (Heynem.)=*serotinus* (Schrenck).

3. *Agriolimax* (Mörch), with *agrestis* (L.).

4. *Hydrolimax*, g. n., with *lævis* (Müll.)=*brunneus* (Forbes & Hanley).

5. *Lehmannia* (Heynem.), with *marginata* (Müll.)=*arboreum* (Bouch.).

Also Lindström, Gotlands nut. Mollusk., has described and figured the jaws and teeth of these species.

Limax etruscus, sp. n., Issel, Bullett. Malacol. Ital. i. p. 69, pl. 5. figs. 1, 2, near Florence.—*L. bæticus*, sp. n., Mabille, Revue et Mag. Zool. xx. p. 143, Portugal, allied to *L. variegatus* (Drap.).

Limax varians, sp. n., A. Adams, Ann. & Mag. Nat. Hist. i. p. 460, Hakodadi and several islands in Japan.

Heynemann has described the lingual teeth and radula of two *Limacidæ* of Southern Brazil, the one agreeing with the European *Limax agrestis* (L.), the other being probably a new species of *Amalia*. Mal. Blätt. xv. pp. 103, 104, pl. 4. fig. 3.

Amalia (Moquin-Tandon) = *Milax* (Gray). Its generic distinctness is maintained by Heynemann, ibid. pp. 104–106.

Milax atratus, sp. n., near to *gagates* (Drap.) and *scaptobius* (Bourg.), Portugal. Mabille, ibid. p. 142.

Lallemantia, g. n., founded on *Limax carinatus* (Orb.)=*polyptyelus* (Bourg.), J. Mabille, Revue et Mag. Zool. xx. p. 143. [The Recorder cannot find any essential difference from *Limax*; the central part of the shield corresponding to the internal shell forms a gibbosity, which is also the case in *L. gagates*; the structure of the jaw is not mentioned, nor any other observation made regarding its anatomy.]

Krynickillus (Kalenicz.). J. Mabille describes two French species of this genus, viz. *brunneus* (Drap.)=*parvulus* (Norman)=*arenarius* (Gassies, see Zool. Record, iv. p. 558), rather common near Paris, and *cyrniacus*, sp. n., from Corsica. The latter belongs to the section with striated shield, *Malinastrum*, as well as *K. subsaxanus* (Bourg.), from Algeria; the former to the section with granulated shield, *Malino*, as well as *lumbricoides* (Morelet), from Portugal, and *brondelianus* (Bourg.), from Algeria. Revue et Mag. Zool. xx. pp. 140–142.

Dendrolimax, g. n. Shield perforated at its hinder end; body keeled above; a caudal gland; jaw smooth, denticles of the radula quadrangular, with projecting points; rudiment of shell calcareous, a little convex.—*D. heynemanni* (Dohrn), sp. n., Prince Island, in the Gulf of Guinea, on the foliage of trees and shrubs. Heynemann, Mal. Blätt. xv. pp. 32–37, pl. 1. fig. 1.

Vitrina angelicæ (Beck), from Greenland, Mörch, Am. Journ. Conch. iv. p. 27, pl. 3. figs. 1 & 4; *beryllina*, fig. 2; *pellucida* (Müll.), from Denmark perhaps identical with *annularis* (Fér.), fig. 3; *beryllina* or *angelicæ*, also in Iceland, ibid. p. 42.

Vitrina, sp. n., not named, but figured, Gentiluomo, Bullett. Malacol. Ital. i. pl. 5. figs. 4–6, Tuscany.

Vitrina welwitschi, gomesiana, angolensis, and *corneola*, spp. nn., Morelet, Moll. terr. et fluv. Voy. Welwitsch, pp. 51–54, pl. 1. figs. 9, 2, 1, & 3, Angola. —*V. angasi*, sp. n., H. Adams, Proc. Zool. Soc. 1868, p. 15, pl. 4. fig. 11, Capengo, West Africa.

Vitrina milligani (Pfr.), *freycineti* (Fér.), *verreauxi* (Pfr.), *strangei* (Pfr.), *hyalina* (Pfr.), *virens* (Pfr.), *mastersi*, sp. n., *macgillivrayi*, new name for *planilabris* (Cox), *megastoma*, sp. n., and *aquila*, sp. n., are described and figured by Cox, Monogr. Austr. Land-shells, pp. 82–87, pl. 14. [*V. freycineti*, and probably some of the others, belongs to *Helicarion*.]

Vitrina subviridis and *fusca*, spp. nn., Pease, Am. Journ. Conch. iv. pp. 154, 155, pl. 12. figs. 5 & 6, Marquesas Islands.

Nanina vitellus (Shuttl.), Pfeiffer, Novitat. Conch. p. 379, pl. 88. figs. 4–9.

Nanina (*Xesta*) *crespignii*, sp. n., Higgins, Proc. Zool. Soc. 1868, p. 179, pl. 14. fig. 4, Labuan.—*Nanina* (*X.*) *sulcifera*, sp. n., H. Adams, ibid. p. 15, pl. 4. fig. 12, Mauritius. [Allied to *N. cœlatura*, Fér.]

Nanina (*Macrochlamys*) *virginea* and *nitella*. Nevill describes the colours of the living animals. Proc. Zool. Soc. 1868, p. 257.

Nanina (*Macrochlamys*) *geoffreyi*, sp. n., H. Adams, *l. c.* p. 289, pl. 28. fig. 5, Bourbon.—*Nanina* (*M.*) *poweri*, sp. n., H. Adams, *l. c.* p. 292, pl. 28. fig. 20, Mauritius.

Macrochlamys tenuicula, sp. n., H. Adams, *l. c.* p. 14, pl. 4. fig. 9, Bombay.

[*Nanina* ?] *Helix hepatizon* (Gould) [rectius *hepatizusa*], from the island S. Thome, Gulf of Guinea, described and figured by Morelet, Moll. terr. et fluv. Voy. Welwitsch, p. 54, pl. 2. fig. 7, and Journ. Conch. xvi. p. 127.

Nanina (*Rotula*) *cernica*, sp. n., H. Adams, *l. c.* p. 12, pl. 6. fig. 3, Mauritius. The colours of the living animal described by Nevill, *l. c.* p. 258.

Stenopus (Guilding) is identified by L. Guppy with *Conulus* (Fitz.), Ann. & Mag. Nat. Hist. i. p. 434. Mr. Bland (Am. Journ. Conch. iv. p. 183) properly objects to this, *Conulus* wanting the caudal appendage which is characteristic of *Stenopus*. To this genus belong *Zonites implicans* and *Z. umbratilis*. spp. nn., Guppy, *l. c.* pp. 439, 440, and Proceed. Scientif. Assoc. Trinidad, 1868, p. 240, Trinidad.

[*Zonites*] *Helix crypta* (Parreyss), in caves in Dalmatia, described by L. Pfeiffer, Mal. Blätt. xv. p. 84.

[*Hyalina*] *Zonites fulvus* (Drap.), *cellarius* (Müll.), and *nitidus* (Müll.). Jaws and lingual teeth by Lindström, *l. c.* pp. 8, 9, pl. 1. figs. 6, 8, and pl. 2. fig. 10. The jaw of the first is entirely the same as that of the other species; but the lateral teeth are distinguished by an accessory point, as in *Vitrina*.

Hyalina alliaria (Miller)=*nitida* (O. Fabr.)=*steenstrupi* (Mörch), Greenland and Iceland. Mörch, Am. Journ. Conch. iv. pp. 29 & 42.—*H. hammonis* (Ström)=*radiatula* (Alder), Iceland, ibid. p. 42.

Hyalina subterranea (Bourg. as *Zonites*) found in Northern Germany. Its

differences from *crystallina* (Müll.) pointed out by O. Reinhardt, Sitz. Ber. Gesellsch. naturf. Freunde, Berlin, 1868, p. 31.

[*Hyalina*] *Zonites dutaillyanus*, sp. n., Mabille, Revue et Mag. Zool. xx. p. 143, Jura, allied to *nitens* (Mich.).—*Z. mortilleti*, sp. n., the name afterwards changed into *gerfalchensis*, the former being preoccupied, Pecchioli, Bullett. Malacol. Ital. i. p. 25, pl. 2. figs. 8–12, and p. 52, from Gerfalco, province of Siena, in Tuscany.—*Z. lawleyanus* (Bourguignat, 1863), its description reproduced by Gentiluomo, ibid. p. 73, Florence.—*Z. herculeus*, sp. n., Rambur, Journ. Conch. xvi. p. 268, Monaco, subfossil.—*Z. subplicatulus* (Bourg. 1864) described and figured by Bourguignat, Hist. Malacolog. Tunis, p. 9, pl. 1. figs. 5–9.—*Z. issericus*, sp. n., Bourguignat, Moll. nouv. lit. fasc. ix. p. 261, pl. 41. figs. 1–7, or Revue et Mag. Zool. xx. p. 369, pl. 16. figs. 1–3, Kabylie.

[*Hyalina*, sect. *Mesomphix*] *Zonites leopoldianus* (Charp.) [= *olivetorum* (Gmel.)]. Its occurrence in Northern Italy, near Brescia and Verona, recorded by Strobel, p. 34. [According to Spinelli and Strobel, it is here of smaller size than in Tuscany.] .

Hyalina (*Conulus*) *semen-lini* (Moric.). Lingual teeth by Heynemann, Mal. Blätt. xv. p. 106.

Hyalina (*Conulus*) *phyllophila*, *incerta*, *tenera*, *stenogyra*, and *acutangula*, spp. nn., A. Adams, Ann. & Mag. Nat. Hist. i. pp. 467, 468, Japan. [The author does not state whether it has been ascertained by the examination of the jaw that these species belong to *Hyalina* and not to *Helix*. The Recorder has seen specimens of the first only, *phyllophila*; and he thinks it to be a *Helix* nearly allied to, or perhaps a variety of, *conospira* (Pfr.). Adams's *incerta* appears to be the same as the Recorder's *Helix conulina*, Ostasiat. Expedit. 1867, ii. p. 24.]

Conulus fabricii (Beck), Greenland, Mörch, Am. Journ. Conch. iv. p. 29, pl. 3. fig. 5.

With regard to the *Conulus* described by Mr. Guppy, see above, *Stenopus* (p. 474).

With regard to the Australian species of *Hyalina*, see below, *Helix* (p. 479).

Odontognatha.

Arion. J. Mabille distinguishes *A. ater* (L.) as a species from *rufus* (L.), stating that it is especially found on high mountains, but occurs also sometimes in the plains [it is more common than *rufus* in the neighbourhood of Berlin and on the mainland near Venice]; he states that *albus* of Férussac is a variety of *rufus*, but that the true *albus* (Müll.), as well as *cinctus* (Müll.) and *fuscus* (Müll.), does not occur in France. *A. lusitanicus*, sp. n., = *rufus*, vars. γ and δ of Morelet, Portugal; *pascalianus*, sp. n., = *fuscatus* of Morelet, not of Fér., also Portugal; *A. hibernus*, *campestris*, *rupicola*, *distinctus*, *neustriacus*, and *bourguignati*, spp. nn., from the neighbourhood of Paris. J. Mabille, Revue et Mag. Zool. xx. pp. 130, 131, and 134–139.

[*Arion*] *Lochea atra* is black or brown in Sweden, but never red. Malm, Göteb. Handl. x. pp. 31–37, pl. 1. fig. 1. Also Lindström, Gotlands nut. Moll. p. 10, pl. 1. fig. 7, treats of this species.—*Lochea alba* (Müll.), Malm, *l. c.* pp. 37–43, pl. 1. fig. 2.

[*Arion*] *Prolepis fuscus* (Müll.) probably = *flavus* and *fasciatus* of Nilsson, and = *cinctus* of Müller, Malm, *l. c.* pp. 43–49, pl. 2. fig. 4.—*Prolepis hortensis*

(Fér.), including some varieties of Nilsson's *fasciatus*, Malm, *l. c.* pp. 49–52, pl. 2. fig. 5. [The differences between *Lochea* and *Prolepis* are found in the lingual teeth and coloration. The author is not justified in dropping the name *Arion* altogether.]

Baudonia, g. n. Allied to *Arion*, but distinguished by its fore part being enlarged and depressed, the shield almost smooth, the head well separated from the body, and the tentacles rather small. *B. timida* (Morelet as *Arion*) and *montana*, sp. n., both from Portugal. Mabille, Revue et Mag. Zool. xx. pp. 131–133. [The characters appear to be of but little value.]

Geomalacus mabillei, sp. n., Baudon, Journ. Conch. xvi. p. 142, with several varieties of colour, found at Mérard, Angy, Mouy, and Morainval, in France.—*G. hiemalis* (Drouet, see Zool. Record, iv. p. 363) is identified with *bourguignati* (Mabille) by Mabille, Revue et Mag. Zool. xx. p. 140.

Helix. According to the structure of the lingual teeth, G. Lindström distinguishes three principal groups of this genus:—

1. Lateral teeth with broad base and 1–2 accessory points, jaw with broad approximate ribs: *H. ruderata, rotundata, hispida*, and *strigella*. [*Patula* and *Fruticicola* of other authors.]

2. Lateral teeth with the uncinate point as broad as the base, jaw with broad and deep furrows between the ribs: *H. fruticum, lapicida, hortensis, nemoralis*, and *arbustorum*. In very young individuals the lateral teeth resemble those of the following group. Pl. 1. fig. 9, lateral teeth of young *H. hortensis*; fig. 10, jaw of the adult; 10*a* with six, 10*b* with only two, 10*c* (*hybrida*) with three ribs.

3. Lateral teeth with very broad base and some accessory points, jaw with broad approximate ribs: *H. pulchella, aculeata*, and *pygmæa*; jaw of the last, pl. 2. fig. 12. Gotlands nutida Mollusker, pp. 11, 12.

a. European species:—

[Sect. *Fruticicola*.] *Helix submontana*, sp. n., allied to *montana* (Charp.) [*rufescens* (Penn.)], Dep. Jura and Ain in France. Mabille, Revue et Mag. Zool. xx. p. 22.—*H. becasis*, sp. n., Rambur, Journ. Conch. xvi. p. 268, Mount Canigou in France.

[Sect. *Xerophila*.] *Helix mirandæ*, sp. n., Rambur, *l. c.* 266, Miranda de Ebro in Spain. Bourguignat states that this is identical with *H. barcinensis* (Bourg. 1864), which is the *caperata* of Rossmässler, Iconogr. vol. iii. figs. 830–832, but not of Montagu. Bourguig. Moll. litig. *l. c.* p. 303, fig. pl. 42. figs. 12–16.—*H. madritensis*, Madrid, *diniensis*, "circa urbem Diniam Galliæ," and *vestita*, Southern France, Corsica, and Spain, spp. nn., Rambur, *l. c.* pp. 266, 267.—*H. ramburi*, sp. n., allied to *apicina* (Lam.), Crimea, Mabille, Revue et Mag. Zool. xx. p. 22.—*H. arenivaga*, sp. n., allied to *arenarum* (Bourg.), Southern France, Mabille, *l. c.* p. 23.—*H. penchinati*, sp. n., Bourguignat, Moll. nouv. litig. p. 305, pl. 42. fig. 1, Barcellona.—*H. cardonæ*, Hidalgo, Journ. Conch. xv. 1867, and xvi. p. 168.—*H. orsinii* (Porro), *H. destituta* (Charp.)=*ocellus* (Villa), and *H. bathyomphala* (Charp.). An account of their variations and differences from allied species is given by Ed. v. Martens, Mal. Blätt. xv. pp. 74–79.—*H. variabilis* (Drap.). Typical form in gardens at Moraro; a smaller variety without bands near the roads on uncultivated spots. Strobel, Atti Soc. Ital. Sci. Nat. xi. 1868, p. 552.

[Sect. *Campylæa.*] *Helix luganensis* (Schinz) mut. *β. philippi-mariæ* (Stabile), figured by Pecchioli, Atti Soc. Ital. Sc. Nat. xi. 1868, p. 26, pl. 2. fig. 7.—*H. cingulata* (Stud.) mut. *anconæ*, Gentiluomo, ibid. p. 40, pl. 3. figs. 9–11 (it is not from Ancona, but dedicated to Prof. C. d'Ancona), Tuscany.—*H. gobanzi* (Frauenfeld, see Zool. Rec. iv. p. 565), ibid. p. 42, pl. 3. figs. 12–14, and p. 53.—*H. umbilicaris* (Brumati) and *cingulata* (Stud.), ibid. pp. 75, 76.—*Campylæa styriaca*, sp. n., v. Frauenfeld, Verh. zool.-bot. Ges. Wien, 1868, p. 149, Styria, allied to *H. phalerata* (Ziegl.).—*Hel. chamæleon* (Parr.), from Carinthia, allied to *H. fontenillii* (Mich.), described by Pfeiffer, Mal. Blätt. xv. p. 84.—*Helix brocardiana* and *cyrniaca* (Dutailly, see Zool. Record, iv. p. 565), from Corsica, described and figured by Bourguignat, Moll. nouv. lit. fasc. x. pp. 299 and 301, pl. 44. figs. 4–6 and 7–9; the true *H. raspailii* (Payr.), ibid., figs. 1–3.

[Sect. *Tachea.*] *Helix nemoralis* (L.). A report on J. Sauveur's paper on the varieties of this species, in the Italian language, Bullett. Malacol. Ital. i. pp. 27–30; an addition to it, ibid. p. 63.—*H. nemoralis*, var. *undulata*, with oblique blackish streaks. Gentiluomo, Bullett. Malacol. Ital. i. p. 9, pl. 1. figs. 9, 10, Lucca.—*H. hortensis* (Müll.). The so-called var. *hybrida*, with pink-coloured peristome, agrees in jaw, teeth, and sagitta perfectly with the true *hortensis*; both occur together also where no *nemoralis* is to be found; it is therefore a variety of *hortensis*, and not a hybrid. Lindström, Gotl. nutid. Moll. p. 13.

[Sect. *Macularia* and *Iberus.*] *Helix melitensis* (Fér.) figured by Issel, Bullett. Malacol. Ital. p. 17, pl. 2. figs. 1, 2.—*Helix serpentina* (Fér.) is found near Leghorn. Gentiluomo, ibid. p. 14. Mabille regards as distinct species *H. hospitans* (Bonelli), *isilensis* (Villa), and *magnettii* (Cantr.), from Corsica and Sardinia, Rev. et Mag. Zool. xx. pp. 12–16.—*Helix orgonensis* (Philbert) = *undulata* (Mich.); *alræa*, sp. n., from Lombardy. Mabille, *l. c.* pp. 16–19.—*Helix substrigata*, sp. n., from Sicily, and *H. umbrica*, sp. n., from Monte di Somma in Central Italy, Mabille, *l. c.* p. 20.

[Sect. *Pomatia.*] *Helix monœcensis*, sp. n., Rambur, Journ. Conch. xvi. p. 265, Monaco. Bourguignat states that it is identical with *H. paretiana* (Issel, 1867), which occurs only in a fossil and subfossil state in Liguria. Moll. litig. fasc. x. p. 297, pl. 43. figs. 1–3.

b. Species from Western Asia and Northern Africa:—

Helix malziana (Parr.), Pfeiffer, Novitat. Conch. p. 398, pl. 92. figs. 14–16, Rhodes.

Helix spiroxia, sp. n., Bourguignat, Moll. Nouv. Lit. fasc. x. p. 310, pl. 42. figs. 4–6, Alexandrette in Syria, allied to *H. nummus* (Ehrenb.), which is figured on the same plate, figs. 1–3.

Helix faidherbiana, djebarica, and *tlemcenensis*, spp. nn., Bourguignat, *l. c.* fasc. ix. pp. 263, 265, and 267, pl. 39. figs. 1–3, 4–8, and 9–13, or Rev. et Mag. Zool. xx. pp. 371, 372, and 373, pl. 14. figs. 1–3, 4–8, and 9–13, Algeria. —*H. rouvieriana*, sp. n., Bourg. ibid. fasc. x. p. 306, pl. 43, figs. 4–8, Kabylie, allied to *H. boissyi*, which is figured on the same plate, figs. 9–13.

Helix fleurati, malaspinæ, bardoënsis, and *arianensis*, spp. nn., Bourguignat, Hist. Malacol. Tunis, pp. 12, 14, 18, and 21, pl. 1. figs. 1–4, 10–14, 19–21, and 22–25; *H. warnieriana* (Bourg. 1864), *tunetana* (Pfr. 1850), and *tristrami* (Pfr. 1860) are described in the same work, pp. 16, 22, 23, and figured,

figs. 15–18, 26, 27, and 28–30; *H. medicaria* (Pfr. 1860) described, p. 15, and several varieties of *H. constantinæ* (Forbes), p. 12: all from Tunis.

c. Species from Japan:—

Helix (*Camena*) *miranda*, *serotina*, and *editha*, (*Fruticicola*) *patruelis*, *peculiaris*, *gibbosa*, *sphinctostoma*, *collinsoni*, *commoda*, *despecta*, *craspedocheila*, *proba*, and *concinna*, (*Plectotropis*) *conella*, *setocincta*, *trochula*, and *scabricula*, (*Patula*) *elatior* and *depressa*, spp. nn., Japan, chiefly from the small islands on its western coast. A. Adams, Ann. & Mag. Nat. Hist. i. pp. 461–467. *H. patruelis* and *peculiaris* form with *H. japonica* a section, *Satsuma*.

Helix nimbosa and *eoa*, spp. nn., Crosse, Journ. Conch. xvi. pp. 277, 278.

d. Species from India and the Indian Archipelago:—

Helix (*Arionta*) *elatior*, sp. n., Martens, Malakozool. Blätt. xv. p. 157, Himalaya. [As this name is preoccupied, I change it into *montium*.] *H.* (*Corilla*) *pettos*, sp. n., ibid., p. 158, Himalaya.

Helix tournoueri, sp. n., Crosse, Journ. Conch. xvi. pp. 101 and 173, pl. 6. fig. 4, Indo-China? [Probably = *Helix platyodon*, Pfr.]

Helix rostrella, (Pfr.) Novitat. Conch. p. 379, pl. 88. figs. 1–3, and *H. horrida*, (Pfr.) ibid. p. 399, pl. 92. figs. 17–19, both from Cambodja.—*H. livesayi*, (Pfr.) ibid. p. 397, pl. 92. figs. 12, 13, Philippines.

e. African species:—

Helix welwitschi and *H. chrysosticta*, spp. nn., Morelet, Moll. Terr. et Fluv. Voy. Welwitsch, pp. 55, 56, pl. 2. fig. 4, and pl. 1. fig. 5; Journ. Conch. xvi. pp. 128 and 129: Island S. Thome; the first allied to *H. malleata* (Fér.), and figured also by Crosse, *l. c.* pl. 6. fig. 5.

Helix subsepulcralis, sp. n., Crosse, *l. c.* p. 174, Madagascar.

Discus verticella, sp. n., H. Adams, Proc. Zool. Soc. 1868, p. 12, pl. 4. fig. 2, Mauritius; *D. serratus*, sp. n., H. Adams, *l. c.* p. 290, pl. 28. fig. 6, Mauritius.

Stylodon (*Erepta*) *caldwelli* (Bens.). Colours of the living animal described by Nevill, Proc. Zool. Soc. 1868, p. 258.

f. Species from Australia:—

The "Monograph of Australian Land-shells," by J. Cox, has been mentioned above, p. 421. The species of *Helix* are treated on pp. 1–68; they are distributed in groups, for which sometimes names are used properly belonging to extra-Australian forms, with which they should not be united. It would take too much space to enumerate here all the species, and we must be satisfied to mention those only examined by the author; but we must again state that the work is indispensable to the student of Australian malacology:—

I. *Xesta* [this name is used by Mr. Cox for the group *Hyalina*, not for *Xesta* of Albers, which belongs to *Nanina*]: *villaris* (Pfr.), p. 2, pl. 10. fig. 8; *rustica* (Pfr.), p. 2, pl. 9. fig. 3; *circumcincta* (Cox), p. 3, pl. 5. fig. 5; *waterhousei*, new name for *subangulata* (Adams and Angas), p. 3; *microcosmos*, new name for *microscopica* (Cox), p. 3, pl. 8. fig. 14 [may belong to *Acanthinula*].

II. *Rhyssota* [evidently = *Thalassia*, Albers]: *pudibunda*, sp. n., p. 4, pl. 2.

fig. 11, from Richmond River and Moreton Bay; *subrugata* (Pfr.), p. 4, pl. 9. fig. 2; *moretonensis* (Pfr.), p. 5, pl. 10. fig. 2.

III. *Paryphanta*: *H. atramentaria* (Shuttl.), p. 5, pl. 3. fig. 2.

IV. *Helicophanta* [*Panda*, Alb.]: *H. falconari* (Reeve), p. 5, pl. 6. fig. 6; *maconelli* (Reeve as *Bulimus*), p. 6, pl. 3. fig. 5.

VI. *Conulus*: *H. turriculata*, sp. n., p. 8, pl. 8. fig. 11, Queensland; *parramattensis* (Cox), p. 8, pl. 6. fig. 10; *penolensis* (Cox), p. 9, pl. 11. fig. 12; *wilcoxi* (Cox), p. 9, pl. 4. fig. 12.

VII. *Hyalina*: *H. sydneyensis* (Cox), p. 9, pl. 9. fig. 16, and pl. 18. fig. 3; *nitida* (Müll.), p. 11, pl. 9. fig. 15; *splendidula* (Pfr.), p. 10, pl. 3. fig. 3; *minima*, sp. n., p. 10, pl. 12. fig. 8, Tasmania; *albuminoides*, sp. n., p. 11, pl. 12. fig. 2, Flinders Range, South Australia; *lyndhurstensis*, sp. n., p. 11, pl. 17. fig. 1, Lyndhurst, Sydney.

VIII. *Discus* [*Patula*]: *sericatula* (Pfr.), p. 12, pl. 12. fig. 6; *inusta*, new name for *nautiloides* (Cox), p. 13, pl. 10. fig. 3; *cochlidium* (Cox), p. 13, pl. 8. fig. 1; *pexa*, sp. n., p. 13, pl. 8. fig. 2, Paramatta, New South Wales; *brazieri*, sp. n., p. 14, pl. 11. fig. 18, Sydney; *saturni* (Cox), p. 14, pl. 6. fig. 11; *lirata* (Cox), p. 15, pl. 11. fig. 3; *albanensis*, sp. n., p. 14, pl. 4. fig. 2, King George's Sound; *funerea*, sp. n., p. 16, pl. 3. fig. 1, New South Wales; *juloidea* (Forbes), p. 17, pl. 11. fig. 19; *bellii* (Cox), p. 17, pl. 6. fig. 5; *vinitincta*, sp. n., p. 18, pl. 1. fig. 6, Upper Richmond River; *omicron* (Pfr.)= *ammonitoides* (Reeve), p. 18, pl. 10. fig. 1; *corticicola* (Cox), p. 19, pl. 7. fig. 7; *mucosa*, sp. n., p. 19, pl. 11. fig. 14, Clarence River; *rapida* (Pfr.), p. 19, pl. 3. fig. 9; *bombycina* (Pfr.), p. 20, pl. 10. fig. 11; *stroudensis* (Cox), p. 20, pl. 11. fig. 1; *diemenensis* (Cox), p. 20, pl. 7. fig. 6*; *retepora* (Cox), p. 21, pl. 7. fig. 8; *morti* (Cox)=*paradoxa* (Cox), p. 21, pl. 11. fig. 13; *tasmaniæ*, sp. n., p. 22, pl. 12. fig. 4; *hobarti*, sp. n., p. 22, pl. 12. fig. 11, Tasmania; *cuprea*, sp. n., p. 22, pl. 12. fig. 9, King George's Sound; *melbournensis*, sp. n., p. 22, pl. 12. fig. 10; *grandis*, sp. n., p. 23, pl. 12. fig. 7, Tasmania; *similis*, sp. n., p. 23, pl. 12. fig. 12, Tasmania; *murphyi* (Cox), p. 23.

X. *Patula*†: *H. ptychomphala* (Pfr.), p. 24, pl. 7. fig. 1; *confusa* (Pfr.) p. 24, pl. 4. fig. 3, and pl. 18. fig. 4; *leichhardti* (Cox), p. 25, pl. 5. fig. 1; *capillacea* (Fér.), p. 25, pl. 6. fig. 7, and pl. 11. fig. 8; *strangei* (Pfr.), p. 26, pl. 5. fig. 9, and pl. 18. fig. 17; *bullacea* (Pfr.)=*assimilans* (Cox), p. 26, pl. 4. fig. 11, and pl. 2. fig. 10; *franklandiensis* (Forbes), p. 27, pl. 3. fig. 7; *strangeoides* (Cox), p. 27, pl. 17. fig. 3; *lampra* (Pfr.), p. 28, pl. 10. fig. 9; *lamproides* (Cox), p. 28, pl. 10. fig. 13; *wellingtonensis* (Cox), p. 29, pl. 7. fig. 5; *namoiensis*, sp. n., p. 29, pl. 18. fig. 10, Namoi River, New South Wales; *harriettæ*, sp. n., p. 29, pl. 18. fig. 9, Richmond River; *ramsayi*, sp. n., p. 30, pl. 18. fig. 11, Richmond River.

XI. *Hygromia* [*Fruticicola*]: *H. jervisensis* (Q. & G.), p. 30, pl. 1. fig. 2; *gilberti* (Pfr.), p. 30, pl. 1. fig. 8, and pl. 18. fig. 7.

XII. *Xerophila*: *H. australis* (Menke), not known to the author.

XIII. *Videna*: *H. launcestonensis* (Reeve), p. 31, pl. 7. fig. 4 [*Anoglypta* (Mart.)]; *sinclairi* (Pfr.), p. 32, pl. 7. fig. 3; *hamiltoni* (Cox), p. 32, pl. 7. fig. 2; *lizardensis* (Pfr.), p. 33, pl. 4. fig. 1.

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* Perhaps=*coma* (Gray).

† [Contains aberrant forms of *Patula*, most of them belonging to *Rhytida* (Alb.) and *Macrocydoides* (Mart.).]

XV. *Trochomorpha*: *H. ophelia* (Pfr.), p. 34, pl. 19. fig. 4, does not agree with the figure and description given by Reeve.

XVII. *Pomatia* [a rather peculiar group, allied to *Camena*]: *H. grayi* (Pfr.) p. 35, pl. 6. fig. 5, pl. 1. figs. 4 & 9, pl. 10. fig. 7; *coriaria* (Pfr.), p. 36, pl. 2. fig. 7, pl. 8. fig. 10, and pl. 10. fig. 5; *læsa* (Reeve), p. 37, pl. 2. fig. 9; *victoriæ*, sp. n., p. 37, pl. 12. fig. 1, Western Port, Victoria; *expeditionis*, sp. n., p. 37, pl. 18. fig. 12, Tropical Australia; *marcescens* (Cox), p. 37, pl. 4. fig. 5, and pl. 18. fig. 6; *monacha* (Pfr.), p. 38, pl. 18. fig. 13; *mulgoæ*, sp. n., p. 38, pl. 1. fig. 7, New South Wales; *scotti* (Cox), p. 39, pl. 10. fig. 4; *stutchburyi* (Pfr.), p. 39, pl. 10. fig. 10; *greenhilli* (Cox), p. 40, pl. 9. fig. 1, and pl. 18. fig. 2.

XVIII. *Galaxias* [*Xanthomelon* (Mart.)] &c.: *H. pomum* (Pfr.) p. 40, pl. 4. fig. 7; *pachystyla* (Pfr.), p. 40, pl. 6. fig. 8; *pachystyloides*, sp. n., p. 41, pl. 5. fig. 4, Cape York; *forsteriana* (Pfr.), p. 42, pl. 4. fig. 8; *dunkiensis* (Forbes), p. 43, pl. 8. fig. 9; *prunum* (Fér.), p. 43, pl. 4. fig. 6; *aridorum* (Cox), p. 44, pl. 11. fig. 16; *exocarpi*, sp. n., p. 44, pl. 2. fig. 2, New South Wales; *blackmanni*, sp. n., p. 45, pl. 11. fig. 7, Queensland; *macleayi* (Cox), p. 45, pl. 8. fig. 3, Queensland; *duralensis*, sp. n., p. 46, pl. 8. fig. 8, New South Wales; *funiculata* (Pfr.), p. 46, pl. 11. fig. 15.

XIX. *Plagioptycha*: *H. duclosiana* (Fér.) is probably not Australian, p. 47. [It appears to be=*H. bahamensis* (Pfr.), from the Bahama Islands.]

XX. *Planispira*: *H. brevipila* (Pfr.), p. 47, pl. 5. fig. 2, from South Australia to Torres Straits; *porteri* (Cox), p. 48, pl. 3. fig. 6; *hystrix*, sp. n., p. 48, pl. 17. fig. 3, Port Curtis.

XXI. *Hydra* (Ad.) [*Hadra*]: *patruelis* (Ad. & Ang.), p. 49, pl. 3. fig. 8; *angasiana* (Pfr.), p. 49, pl. 6. fig. 4; *bitæniata* (Cox), p. 50, pl. 4. fig. 9; *evandaleana* (Pfr.), p. 49, pl. 9. fig. 18, peculiarly rugose; *lincolniensis* (Pfr.), p. 51, pl. 6. fig. 9; *lorioliana* (Crosse), p. 52, pl. 3. fig. 4; *luteofusca*, sp. n., p. 52, pl. 12. fig. 1, Flinders Range, South Australia.

XXII. *Macrocyclis*: *H. cunninghami* (Gray), p. 52, pl. 1. fig. 5, extremely variable; *mühlfeldtiana* (Pfr.), p. 53, pl. 6. fig. 2.

XXIII. *Ampelita* [rather *Planispira*]: *H. leucocheilus*, new name for *mariæ* (Cox), p. 54, pl. 8. fig. 7.

XXIV. *Camena*: *H. bipartita* (Fér.) p. 54, pl. 5. fig. 7; *incei* (Pfr.), p. 54, pl. 5. fig. 5, and pl. 18. fig. 1, variable; *lessoni* (Pfr.), including *seminigra* (Crosse), p. 55, pl. 4. fig. 10; *appendiculata* (Pfr.), p. 56, pl. 5. fig. 11: *semicastanea* (Pfr.), p. 56, pl. 5. fig. 10; *yulei* (Forbes), p. 57, pl. 5. fig. 3; *blomfieldi* (Cox), p. 57, pl. 1. fig. 1; *cerata*, new name for *forbesi* (Cox)=*cerea* (Cox), both preoccupied [is *coxi*, Crosse, 1866], p. 58, pl. 8. fig. 4; *similaris* (Fér.), p. 58, pl. 9. fig. 14; *mansueta* (Pfr.), p. 59, pl. 2. fig. 4; *pliculosa* (Pfr.), p. 60, pl. 9. fig. 12.

XXV. *Vallonia* [rather *Planispira*]: *H. cyclostomata* (Guill.), p. 61, pl. 10. fig. 12 [*Planispira*]; *delessertiana* (Guillou)=*taranaki* (Gray)=*torresiana* (Hombr. & Jacq.), p. 61, pl. 5. fig. 8 [*Streptaxis*]; *alexandræ* (Gray), p. 61, pl. 6. fig. 1 [*Alycæus*?].

XXVI. *Thersites*: *H. richmondiana* (Pfr.) p. 62, pl. 8. figs. 5, 6; *macgillivrayi* (Forbes), p. 61, pl. 2. fig. 12; *bidwilli* (Pfr.), p. 63, pl. 2. fig. 3; *delta* (Pfr.)=*conoidea* (Cox)=*fenestrata* (Cox), p. 63, pl. 4. fig. 13.

XXVII. *Tachea* [*Rhagada*], for *H. tescorum* (Bens.) and *dringi* (Pfr.).

XXVIII. *Callicochlias* [belongs to section XVII.] *H. fraseri* (Gray), p. 64, pl. 10. fig. 6; *mitchellæ* (Cox), p. 65, pl. 9. fig. 9.

XXIX. *Geotrochus*: *H. dupuyana* (Pfr.), p. 65, pl. 2. fig. 5 (perhaps= *Caracolle novæ hollandiæ* (Gray); *poiretiana* (Pfr.), p. 66, pl. 2. fig. 1, not from Port Essington, but Night Island, north-east coast of Australia; *fucata* (Pfr.), p. 67, pl. 2. fig. 8; *conscendens* (Cox), p. 67, pl. 2. fig. 6. The species of this section are often found on trees.

Finally there are added, without indication of the section, *H. edwardsi*, Liverpool River, resembling *pisana* (Müll.) [*Rhagada*?], *H. creedi*, sp. n., Cadell Straits, and *H. wesselensis*, sp. n., Wessel Islands, all from Capt. Cadell's recent expedition to the north coast of Australia, pp. 109, 110, pl. 19. figs. 3, 2, and 4.

Helix (*Rhagada*) *silveri*, sp. n., Angas, Proc. Zool. Soc. 1868, p. 257, Eastern Plains, South Australia.

g. Species from Polynesia:—

Helix microphis, *caledonica*, *acanthinula*, and *dendrobia*, spp. nn., Crosse, Journ. Conch. xvi. pp. 91–97, pl. 1. figs. 3, 4, 6, & 5, from New Caledonia, the first resembling some American *Polygyræ*.—*H. candeloti*, *bavayi*, *cerealis*, *mouensis*, *paulucciæ*, *chelonitis*, and *trichocoma*, spp. nn., discovered by E. Marie in New Caledonia, and described by H. Crosse, *l. c.* pp. 145–159, pls. 8 & 9; *H. astur* (Crosse) is ascertained to be New-Caledonian, ibid. p. 160.

Helix villandrei (Gassies, Journ. Conch. xiii. 1865), figured Journ. Conch. xvi. pl. 9. fig. 3, New Caledonia. *H. ferrieziana*, sp. n., Crosse, ibid. p. 278, New Caledonia. [These species appear to belong to the section or genus *Patula*.]

Helix leucolena (Crosse, Journ. Conch. xv. 1867) fully described and figured by the same, ibid. xvi. p. 171, pl. 6. fig. 6. Said to come from Vaneca-Levu, Feejee Islands. *H. abrochroa*, sp. n., Crosse, *l. c.* p. 176, Viti-Levu.

Helix alta, sp. n., Ponape Island, Polynesia, *marquesana*, sp. n., Marquesas Islands, and *congrua*, sp. n., Ponape Isl., Pease, Am. Journ. Conch. iv. pp. 153, 154, pl. 12. figs. 1–4.

h. Species from Tropical and Southern America:—

Pfeiffer (Novit. Conchyl. pp. 369–396) describes and figures the following Cuban species:—*H. imperator* (Montf.), *apollo* (Pfr.), *melanocephala* (Gundl.), *jactata* (Gundl.), *rostrata* (Pfr.), *pazensis* (Poey), *marginelloides* (Orb.), *gutierrezi* (Poey), *arangiana* (Poey), *carocolla* (L.) (young).

Helix cæca ierensis and *bactricola*, spp. nn., Proceed. Scientif. Assoc. Trinidad, 1868, pp. 241, 242 (Ann. & Mag. Nat. Hist. i. p. 440), Trinidad.

Helix (*Labyrinthus*) *triplicata*, sp. n., Martens, Malakozool. Blätter, xv. p. 156, Costarica.

Helix semiclausa, sp. n., Martens, *l. c.* p. 175, inland regions of the province Rio Grande do Sul, figured in Pfr. Novitat. Conchol. vol. iii. pl. 88. figs. 10–12; lingual teeth and jaw by Heynemann, Mal. Blätt. xv. p. 107, pl. 4. fig. 4. It belongs to the group *Lysinoë* (H. & A. Adams)=*Aglaja* (Albers).—*Helix* (*Aglaja*) *farrisi*, sp. n., Higgins, Proc. Zool. Soc. 1868, p. 179, pl. 14. fig. 5, Peru.

Helix cuyana (Strobel) has not been found in Peru, but eastwards of the Andes of Chile in Cuyo, which corresponds to the provinces of Mendoza, S. Juan, and S. Luis, and more particularly on the top of the Angostura or Straits

between Cajon de la Villa Vicencio to the Cerro Dorado, eastern slope of the Southern Andes. Atti Soc. Ital. Sci. Nat. xi. pp. 347–350.

i. Species from North America :—

Helix alternata (Say) : on its variability, Lewis, Am. Journ. Conch. iv. p. 81.

Ammonitella, a terrestrial corneous little shell, each whorl being enclosed for its greatest part by the following, so that above the spire forms a crateriform depression, aperture vertically narrow, peristome obtuse, thickened, umbilicus large. *A. yatesii*, sp. n., 100 feet within the mouth of the limestone cave at Cave City, Calaveras Co., California, J. G. Cooper, Am. Journ. Conch. iv. p. 209, pl. 18. figs. 1–3. [The Recorder thinks that it is very similar to *Drepanostoma nautiliforme* (Porro) from Italy, placed now in the genus *Helix*.]

k. Species from unknown localities :—

Helix questieriana, sp. n., Crosse, Journ. Conch. xvi. p. 268, pl. 19. fig. 4. Allied to *H. vesicalis* (Lam.)=*cornu-giganteum* (Chemn., Pfr.), which latter name is rejected by Crosse. *H. plethorica* and *ancylochila*, spp. nn., Crosse, Journ. Conch. xvi. pp. 175, 176.

Cochlostyla reginæ (Brod.) : a variety of it leading directly to *C. elisabethæ* (Semper), from Luzon, described by E. v. Martens, Malakozool. Blätt. xv. pp. 162–164. *C. onyx* (Brod.) : its very close affinity to *C. alberti* (Brod.) pointed out, from specimens sent from Camarines sur Luzon, by the same, *l. c.* p. 164. *C. chloroleuca*, sp. n., E. v. Martens, *l. c.* p. 165, Flocos sur Luzon.

[*Cochlostyla*] *Helix coronadoi*, sp. n., Gonzalez Hidalgo, Journ. Conch. xvi p. 352, pl. 13. fig. 5. Allied to *zonifera* (Sow.), *caillaudi* (Desh.) [and *norrisi* (Sow.)]. Locality not known.

Bulimus oblongus (Müll.) and *zebra* [? Müll.]. Lingual teeth described by Guppy, Transact. Linn. Soc. xxvi. p. 192.

Bulimus ovatus (Müll.) common at Rio Janeiro, Martens, Mall. Blätt. xv. pp. 169 and 216. *B. oblongus* (Mull.) : varieties with heavy shells in the virgin forest, smaller ones with thinner shells in the low country near Porto Alegre, Martens, *l. c.* p. 176 ; lingual teeth and jaw by Heynemann, *l. c.* p. 107, pl. 5. fig. 7.—*B. pudicus* (Müll., Pfr. 1857) found by Dr. Hensel in the inland regions of Rio Grande do Sul ; the epidermis in fresh specimens greenish-brown, Martens, *l. c.* p. 178.

Bulimus leucostomus (Sow.), Pfeiffer, Novitat. Conch. p. 409, pl. 94. figs. 1, 2, Valle de Lanes in Peru ; *santacruzensis* (Orb.), ibid. p. 416, pl. 95. figs. 1, 2.

Bulimus (*Odontostomus*) *dentatus* (Wood)=*Helix brasiliensis* (Fér.), figured by J. Mawe in 1812, Martens, Mal. Blätt. xv. p. 215.—*B. tudiculatus*, sp. n., Martens, *l. c.* p. 178, inland region of the Brazilian province Rio Grande do Sul.

Bulimus (*Pelecychilus*) *egregius* (Pfr.)=*Hel. auris cervina* (Fér.) figured by J. Mawe in 1812, Martens, *l. c.* p. 215.—*Plecocheilus auris-sciuri* (Guppy), its lingual teeth described by Guppy, Transact. Linn. Soc. xxvi. p. 192, pl. 11. fig. 4.

Bulimus bavayi, sp. n., Crosse et Marie, Journ. Conch. xvi. p. 161, pl. 8. fig. 1, New Caledonia, Group *Placostylus*.

Bulimus elobatus (Gould)=*morosus* (Gould), Pfeiffer, Novitat. Conch. p. 418, pl. 95. figs. 7, 8, Feejee Islands.

Bulimus exaratus (Müll.) found by Dr. Welwitsch on the most elevated parts of the island S. Thome in the gulf of Guinea; shell perforated, peristome in the adult thickened, columella not truncated; therefore neither an *Achatina* nor a *Limicolaria*. Morelet, Moll. Terr. et Fluv. Voy. Welwitsch, p. 59, Crosse, Journ. Conch. xvi. p. 131, pl. 6. fig. 2.

Limicolaria hidalgoi (Crosse, Journ. Conch. xv. 1867), fully described and figured by the same, ibid. xvi. p. 170, pl. 6. fig. 1. Locality unknown.

[*Limicolaria*] *Bulimus flammeus* (Müll.), a variety of which, without bands, is said to be *B. aurora* (Jay) = *effusus* (Reeve), lives on the banks of the Niger; *B. chromatellus* (Morelet) on rocks in the virgin forest of the more elevated parts of Angola; *B. jaspideus* (Morelet) in muddy ground on the river Lucala, Morelet, Moll. Terr. et Fluv. Voy. Welwitsch, pp. 61–63; the two last figured pl. 3. fig. 2, and pl. 2. fig. 2. In one of the figures of *B. chromatellus*, the columella is figured as being truncated, which is an error: Morelet, Journ. Conch. xvi. p. 145.

Achatina monetaria, sp. n., Morelet, Moll. Terr. et Fluv. Voy. Welwitsch, p. 63, pl. 8. figs. 2 & 4, Benguela, see above, p. 438. *Ach. paivæana*, *welwitschi*, *bandeirana*, *bayoniana*, *tavaresiana* (all of Morelet), and *perfecta*, sp. n., Morelet, *l. c.* pp. 65–69, pl. 6. fig. 3, pl. 5. fig. 2, pl. 6. fig. 1, pl. 7. fig. 1, pl. 4. fig. 6 & fig. 2, from Congo, Angola, and Benguela. The following are species of smaller size and of more elongated form:—*Ach. colubrina* (Morelet), *l. c.* p. 70, pl. 4. fig. 1, *zebriolata*, sp. n., p. 72, pl. 3. fig. 1, *polychroa* (Morelet), p. 72, pl. 3. fig. 5, *specularis* (Morelet), p. 74, pl. 4. fig. 4, all from Angola, and *A. hortensiæ* (Morelet), p. 74, pl. 4. fig. 3, Benguela at an elevation of 9000 feet above the sea.

The same author places in a distinct subdivision of *Achatina* the following species:—*Ach. barbigera* (Morelet), p. 75, pl. 9. fig. 5, Journ. Conch. xvi. p. 134, = *marmorea* (Reeve), island of S. Thome; its epidermis is longitudinally plaited, and beset with spiral rows of hairs; *Ach. clavus* (Pfr.), which he regards as nearly allied to his *lotophaga*, also from S. Thome; *lævigata*, Pfr., from Serra de Pedras de Guinga, 3000 feet above the sea; and some others, which will be mentioned under the genus *Stenogyra*.

Goniognatha.

[*Bulimulus*]. Mr. Guppy has discovered that several species differ in their lingual teeth from *B. oblongus*, Trans. Linn. Soc. xvi. p. 192. The species examined are *B. virgulatus*, *multifasciatus* (pl. ii. fig. 1), *immaculatus*, and *aureolus*; the teeth are arranged in divergent rows. The horseshoe-shaped jaw of *B. multifasciatus* is figured by Hogg, Trans. R. Microsc. Soc. xvi. pl. 13. fig. 85. The lingual teeth of *B. auris-leporis* and *B. papyraceus* (Mawe), from Rio Grande do Sul, are examined and figured by Heynemann, Mal. Blätt. xv. p. 109, pl. 3. figs. 8 & 9 *b*, the jaw of the last being composed of about 25 pieces, the middle triangular, the lateral narrow, fig. 9. *Bul. sporadicus* (Orb.) has the jaw simple and ribbed as the true *Bulinus*, Heynemann, ibid. p. 108, pl. 4. fig. 6.

Bulimulus laticinctus, Guppy, Ann. & Mag. Nat. Hist. i. p. 431, Dominica. —*Bul. indistinctus*, sp. n., Guppy, *l. c.* p. 436, Island of Grenada, West Indies.

Bulimus vincentinus (Pfr.) = *multifasciatus* (Guppy, not Lam.) = *immaculatus* (Guppy, not Adams), from Trinidad. The true *B. multifasciatus* of

Lamarck occurs also in Trinidad, as well as in Martinique and the Bahamas. Bland, Am. Journ. Conch. iv. p. 183.

Bulimulus. Pfeiffer (Nov. Conchyl. pp. 415–423) describes and figures the following species from Tropical America:—*B. bahamensis* (Pfr.), *chiapasensis* (Pfr.), *costaricensis* (Pfr.), *aurifluus* (Pfr.), *virginalis* (Pfr.), *heynemanni* (Pfr.), *pluvialis* (Pfr.).

Martens (Malak. Bl. xv.) describes *Bulimulus rhodotrema*, sp. n., from Costa Rica, p. 156, and *B. henselii*, sp. n., from Rio Grande do Sul, p. 180, adding notes on some other species, p. 179.

[*Bulimulus*] *Bulimus atahualpa* (Dohrn) and *tessellatus* (Shuttl.), Pfeiffer, Novitat. Conch. pp. 411 & 412, pl. 94. figs. 11–13 & 14–16, Peru.—*B. cora* (Orb.), ibid. p. 418, pl. 95. figs. 9, 10, Pataz in Peru.

Bulimus (*Otostomus*) *rubrovariegatus* and *lama*, spp. nn., Higgins, Proc. Zool. Soc. pp. 178, 179, pl. 14. figs. 2 & 3, Peru.

[*Bulimulus*, group *Liostracus.*] *Bulimus rectilinearis* (Pfr.), Novitat. Conch. p. 414, pl. 94. figs. 19, 20, Peru.

[*Bulimulus*, sect. *Drymæus.*] *Bulimus membielinus* (Crosse, Journ. Conch. xv. 1867) fully described and figured by Crosse, Journ. Conch. xvi. p. 99, pl. 1. fig. 2, Ecuador. [Similar to *Bulimulus interpictus*, Martens, Mal. Blätt. xiv. 1867.]

[*Bulimulus*, group *Peronæus.*] *Bulimus leucostictus* (Phil.), Pfeiffer, Novitat. Conch. p. 414, pl. 94. figs. 17, 18; *lactifluus* (Pfr.), ibid. p. 425, pl. 96. figs. 13, 14, *anachoreta* (Pfr.), ibid. p. 376, pl. 87. figs. 21, 22, all three from Chile.

Cylindrella. Mr. Bland has discovered the presence of a jaw, composed of numerous overlapping plates, in eight species, Ann. & Mag. Nat. Hist. ii. p. 389; see also Journ. Conch. xvi. p. 316. He figures the jaw of *C. trinitaria* in Am. Journ. Conch. iv. p. 187. [In consequence of this discovery it has become necessary to transfer this genus from the Agnathes to the Goniognathes, and the following genus, *Eucalodium*, is rendered rather doubtful.]

Eucalodium. H. Crosse and P. Fischer establish this new genus on *Cylindrella ghiesbreghti* (Pfr.), having found an arcuate, finely striate jaw, and the lingual teeth disposed in transverse rows of equal size, only the median being a little smaller and tricuspidate, whilst in *Cylindrella sanguinea* they could not find a jaw. The rows of teeth are very oblique, the lateral few in number (12, in *ghiesbreghti* 32, on each side), of twisted form, and very different from the median. To *Eucalodium* would very probably belong the larger Mexican species with filiform keel at the base—*decollata* (Nyst), *grandis* (Pfr.), *splendida* (Pfr.), *turris* (Pfr.), *clava* (Pfr.), *speciosa* (Dkr.), and *boucardi* (Sallé). Journ. Conch. xvi. pp. 85–89.—*Euc. blandianum*, sp. n., Crosse & Fischer, ibid. p. 276, Orizaba.

Cylindrella eximia (Pfr.) = *petiveriana* (Fér., not described) = *crenata* (Weinland & Mart.), Crosse, Journ. Conch. xvi. pp. 347–349.

Aulacognatha (Pupacea).

Buliminus (*Pachnodus*) *velutinus* (Pfr.), *fulvicans* (Pfr.), and *niger* (Dufo), from the Seychelles. The colours of the living animals described by Nevill, Proc. Zool. Soc. 1868, p. 258.

Bulimus, sect. *Caryodes*: *dufresni* (Leach), Cox, Monogr. Austr. Land-

shells, p. 70, pl. 13. fig. 12, variable; *angasianus* (Pfr.), Cox, *l. c.* p. 70, pl. 13. fig. 2.

Bulimus, sect. *Liparus*: *atomatus* (Gray), Cox, *l. c.* p. 71, pl. 13. fig. 8, and pl. 18. fig. 10.

Bulimus, sect. *Mesembrinus* [rather *Liparus*]: *dux* (Pfr.), Cox, *l. c.* p. 71, pl. 13. fig. 8, and pl. 18. fig. 16; *tasmanicus* (Pfr.), ibid. p. 72, pl. 13. fig. 1, varying in relative length and breadth.

Bulimus, sect. *Rhabdotus* [rather *Liparus*]: *bidwilli*, sp. n., p. 72, pl. 13. fig. 11, Queensland, on the tops of trees; *indutus* (Menke), *l. c.* p. 73, pl. 13. fig. 10; *onslowi* (Cox), *l. c.* p. 74, pl. 13. fig. 13; *melo* (Q. & G.), *l. c.* p. 74, pl. 13. fig. 6; *kingi* (Gray) = *trilineatus* (Q. & G.), *l. c.* p. 75, pl. 13. fig. 7; *mastersi* (Cox), *l. c.* p. 77, pl. 13. fig. 14.

[*Buliminus*, subgenus *Rachis*.] *Bulimus electrinus* (Morelet), including as variety *B. welwitschi* (Morelet) and *ferussaci* (Dunker), both on trees in Angola; *eminulus* (Morelet), at Loanda. Morelet, Moll. Terr. et Fluv. Voy. Welwitsch, pp. 59, 60; the first figured on pl. 2. fig. 1. This figure should be coloured yellow instead of reddish. Morelet, Journ. Conch. xvi. p. 145.—*B. landaueri*, Pfeiffer, Novitat. Conch. p. 421, pl. 95. figs. 15, 16, locality not known [perhaps not distinct from *venustus*, Morelet].

Buliminus, sect. *Napæus*: *adelaidæ* (Ad. & Ang.) = *Pupa ramsayi* (Cox), Cox, Monogr. Austr. Land-shells, p. 69, pl. 13. fig. 5.

[*Buliminus*] *Bulimus sagax* (Frivaldszky), Pfeiffer, Novitat Conch. p. 375, pl. 87. figs. 16–20, Amasia in Asia Minor; *kotschyi* (Pfr.), ibid. p. 377, pl. 87. figs. 23, 24, Asia Minor; *densus* (Pfr.), ibid. p. 377, pl. 87. figs. 25, 26, Malabar; *miles* (Pfr.), ibid. p. 378, pl. 87. figs. 27, 28, locality not known.

Buliminus rufistrigatus (Bens.), *candelaris* (Pfr.), and *eremita* (Pfr.), from the Himalayas. On their varieties and affinities, E. v. Martens, Malakozool. Blätt. xv. pp. 158–161. [N.B. Page 161, instead of Bélanger, read Jacquemont.]

[*Buliminus*, subg. *Chondrula*.] *Bulimus denticulatus*, Pfeiffer, Novitat. Conch. p. 411, pl. 94. figs. 7–10, "Harmanjik;" *blandus* (Frivaldszky), ibid. p. 430, pl. 96. figs. 33–35, Asia Minor.

Partula strigata and *recta*, spp. nn., Pease, Am. Journ. Conch. iv. p. 155, pl. 12. figs. 7 & 8, Marquesas Islands.

Auriculella (Pfr. as subgenus) proposed as genus by Harper Pease, comprising the following species:—*auricula* (Fér.), *chamissoi* (Pfr.), *lurida* (Pfr.) *obeliscus* (Pfr.), *cerea* (Pfr.), and *petitiana* (Pfr.) (perhaps identical with the preceding), and the following new species—*expansa*, *uniplicata*, *ambusta triplicata*, and *pulchra*, all from the Sandwich Islands. Journ. Conch. xvi. pp. 342–347, pl. 14. figs. 6–8.

Achatinella, sect. *Frickella*: *jacksonensis* (Cox) and *wakefieldæ*, sp. n., Cox, Monogr. Austral. Land-shells, pp. 76, 77, pl. 12. fig. 15. Mr. Tryon thinks the latter looks much like a *Carychium*, Am. Journ. Conch. iv. p. 285 [probably both belong to *Spiraxis*].

Tornatellina lamellata (Potiez & Mich.). Lingual teeth by Guppy, Trans. Linn. Soc. xxvi. p. 192, pl. 11. fig. 5.—*T. blandiana*, Pfr., from Grenada, seems to be the same species as *lamellata* from Trinidad, Guppy, Ann. & Mag. Nat. Hist. i. p. 436.—*T. costellosa*, sp. n., Trinidad, Guppy, Transact. Scientif. Assoc. Trinidad, 1868, p. 243.

Glessula fusca, sp. n., H. Adams, Proc. Zool. Soc. 1868, p. 15, pl. 4. fig. 10, Bombay.

Ferussacia oranensis and *diodonta*, spp. nn., Bourguignat, Moll. Nouv. Lit. fasc. ix. pp. 269 and 271, pl. 40. figs. 5–8 and 9–13, or Revue et Mag. Zool. xx. pp. 374 & 375, pl. 15. figs. 5–8 and 9–13, Oran, Algeria.—*F. microxia*, sp. n., Bourg. ibid. fasc. x. p. 313, pl. 43. figs. 14–16, Oran.—*F. carnea* (Risso as *Pegea*) = *Tornatellina fraseri* (Pfr.), common in the ruins of Utica, rare in those of Carthago. Bourg. Hist. Malacol. Tunis, p. 28.

Acicula mauritiana, sp. n., H. Adams, Proc. Zool. Soc. 1868, p. 290, pl. 28. fig. 7, Mauritius.

[*Stenogyra*] *Bulimus caracasensis* (Pfr.) and *Stenogyra octona* (Chemn.). Lingual teeth described by Guppy, Trans. Linn. Soc. xxvi. p. 192; those of the latter figured, pl. 11. fig. 2.

[*Stenogyra*] *Achatina monticola* (Morelet) is found on the most elevated parts of the island of St. Thomas; *Ach. strigosa* (Morelet) = *striatella* (Reeve, Conch. Ic. f. 87), Angola; *Ach. striatella* (Rang), comprising as variety *Ach. petrensis* (Morelet), Loanda and Sierra Leone; *Ach. gracilenta*, sp. n., Angola; *octona* (Chemn.), specimens not to be distinguished from those of the West Indies have been found by Dr. Welwitsch in Angola, at an elevation of 2000 feet above the sea; *muscorum*, sp. n., and *nigella*, sp. n., both from Angola. Morelet, Moll. Terr. et Fluv. Voy. Welwitsch, pp. 77–80, pls. 5–7.

[*Stenogyra*] *Bulimus*, sect. *Opeas*: *tuckeri* (Pfr.), a variety of it is *Bul. walli* (Cox), Cox, Monogr. Austral. Land-shells, p. 69, pl. 13. fig. 9.

[*Stenogyra.*] Pfeiffer describes and figures, in Novit. Conchyl. pp. 372–375, the following Cuban species:—*Bulimus gigas* (Poey), *microstomus* (Gundlach), *gonostomus* (Gundl.), and *gundlachi* (Arango); *bacillus* (Poey), p. 424, and *lucidus* (Poey), p. 430; *Bulimus pyrgiscus* (Pfr.), Sandwich Islands, p. 425; and *B. assurgens* (Pfr.), p. 431.

Stenogyra micra (Orb.) = *caracasensis* (Orb.) and probably also = *sellovii* (King), from Southern Brazil. Martens, Mal. Blätt. xv. p. 217.

Stenogyra coronata, sp. n., Guppy, Ann. & Mag. Nat. Hist. i. p. 439, and Proceed. Scientif. Assoc. Trinidad, p. 239, Trinidad.—*S. plicatella*, new name for *octonoides* of Guppy, 1866, which is not that of Adams. Guppy, *ll. cc.*

[*Melaniella*] *Bulimus acuticostatus* (Orb.), *pichardi* (Arango), *manzanillensis* (Gundl.), *scalarinus* (Gundl.), and *tuberculatus* (Gundl.). Pfeiffer, Novitat. Conch. pp. 426–429, pl. 96. figs. 15–32.

Macroceramus signatus (Guild.). Lingual teeth resembling those of *Helix*. Guppy, Trans. Linn. Soc. xxvi. p. 193, pl. 11. fig. 7.

Macroceramus pazi (Gundl.), *clerchi* (Arango), *latus* (Gundl.), *amplus* (Gundl.), *crenatus* (Gundl.), *variabilis* (Pfr.), *festus* (Gundl.), *costulatus* (Gundl.), *arangoi* (Pfr.), *claudens* (Gundl.), and *blaini* (Gundl.) described and figured by Pfeiffer in Novitat. Conch. pp. 381–389, pl. 89. figs. 1–42.—*M. notatus* (Gundl.), *catenatus* (Gundl.), *grobei* (Gundl.), *parallelus* (Arango), *poeyi* (Gundl.), *palenquensis* (Gundl.), *maculatus* (Wright), *jeannereti* (Gundl.), *infradenticulatus* (Wright), *elegans* (Gundl.), *simplex* (Pfr.), *inermis* (Gundl.), and *minor* (Arango), ibid. pp. 400–408, pl. 93. figs. 1–38, all from Cuba.

Balea variegata, sp. n., A. Adams, Ann. & Mag. Nat. Hist. i. p. 469, Tago, Japan.

Balea (sect. *Temesa*) *australis* (Forbes). Only two small folds on the colu-

mella, but a prominent plate on the apertural wall. Cox, Monogr. Austral. Land-shells, p. 81, pl. 12. fig. 16.

Clausilia. The natural arrangement of the European species is the object of two valuable publications—one by W. v. Vest, in the Transactions of the Transylvanian Society of Natural Sciences, and the other a separate publication by Ad. Schmidt. Vest describes with great accuracy the situation and function of the several plaits within the aperture of the shell. The uppermost or first palatal plait acts as a hinge on which the outer edge of the clausilium moves; the lunella or lunar plait is a modified undermost or fourth palatal plait, and where it occurs the clausilium is not notched. The larger the clausilium, the smaller are all the plaits; the extreme development of this occurs in *Cl. concilians* (Ad. Schmidt), the least in the section *Alopia*, especially in the species *elegans* (Bielz) and *canescens* (Parr.). An accessory palatal plait, above the first, exists in the sections *Medora* and *Delima*. The columellar plait offers to the clausilium a point against which leans either the base only or the whole inner margin; but in some sections of the genus the clausilium never comes into contact with this plait. The spiral lamella serves for guiding the movement of the clausilium; the columellar plait and the inferior lamella form together a recess, in which the clausilium is secured whilst the animal is moving about. The broader and the more curved the inferior lamella, the larger is also the clausilium and the more developed its outside lobe. Vest establishes three principal divisions:—

I. Clausilium bilobed, no lunella; palatal plaits 3–4; clausilium far from the columellar plait. Sections *Alopia*, *Marpessa*, and *Triloba*.

II. Clausilium S-shaped, its tip somewhat rounded or concavely bent outwards; palatal plaits 1–3; clausilium rarely reaching to the columellar plait. Sections *Siciliaria*, *Medora*, *Albinaria*, *Agathylla*, *Cristataria*, *Herilla*.

III. Clausilium entire; rarely more than two palatal plaits; lunella generally present; clausilium generally touching the columellar plait. Sections *Delima*, *Isabellaria*, *Papillifera*, *Dilataria*, *Phædusa*, *Uncinaria*, *Fusulus*, *Olympa*, *Gracilaria*, *Pyrostoma*, *Trigonostoma*, *Mentissa*, *Iphigenia*, *Idyla*, *Strigillaria*, *Alinda*, *Nenia*.

Ad. Schmidt, to whom the preceding paper was known, refuses to use these subgeneric names, thinking they designate divisions of very unequal value, and contents himself with establishing six principal divisions, without distinguishing them by names. He calls them *areæ*; and there are within each several "circles of forms," named from the principal species:—

His first division comprises the circles of *Cl. orthostoma* (Mouss.), *bielzi* (Parr.), the so-called *Baleo-clausiliæ*, further the circles of *Cl. plumbea* (Rossm.), *parreyssi* (Ziegl.), *laminata* (Mont.), and some other species; therefore this division corresponds to the two subgenera *Alopia* and *Marpessa* of other authors. Among the *Baleo-clausiliæ* he includes also (*Balea*) *glauca*

(Bielz), *livida* (Menke), and *glorifica* (Parr.), which are separated from this genus by Transylvanian authors (Vest and Bielz).

The second division comprises the circles of *septemplicata* (Phil.), *stigmatica* (Ziegl.), *stenzii* (Rossm.), *conspurcata* (Drap.), *substriata* (Parr.), *binotata* (Ziegl.), *lævissima* (Ziegl.), *robusta* (Küst.), *semirugata* (Ziegl.), and in a second subdivision (blue-coloured), those of *dalmatina* (Partsch), *macarana* (Ziegl.), *grisea* (Desh.), *modesta* (Ziegl.), *cærulea* (Fér.), *exarata* (Ziegl.), and *strangulata* (Fér.); therefore this division corresponds to the subgenera *Delima*, *Medora*, and *Agathylla* of former authors.

The third division comprises the circles of *solida* (Drap.), *leucostigma* (Ziegl.), and *syracusana* (Phil.), corresponding nearly to the subgenus *Papillifera* of others.

The fourth division has *filograna* (Ziegl.), *pikermiana* (Roth), and *bicarinata* (Roth) as centres of so many circles.

The fifth division has *olympica* (Friv.), *maderensis* (Parr.), *ventricosa* (Drap.), *plicatula* (Drap.), *rugosa* (Drap.), *vetusta* (Ziegl.), *rugicollis* (Ziegl.), *varnensis* (Pfr.), *plicata* (Drap.), *mœsta* (Fér.), *hetæra* (Friv.), *elata* (Ziegl.), *fallax* (Rossm.), *varians* (Ziegl.), and *interrupta* (Ziegl.); therefore it is equivalent to *Iphigenia*, *Laciniana*, and *Alinda* of others.

The sixth division has *tenuilabrus* (Rossm.), *succineata* (Ziegl.), *diodon* (Stud.), *strumosa* (Friv.), *schmerzenbachii* (Parr.), and *detersa* (Ziegl.) as types, and is said to be as closely allied to the first as to the preceding division, the whole arrangement forming, in fact, a circle.

A table shows this and other affinities which could not be expressed in a linear arrangement. Schmidt enumerates 289 species, and gives much information on the specific distinction and varieties of many of them. We shall mention only those which he describes completely.

The new subgenera proposed by Vest are founded on the types mentioned here:—

Triloba: *Cl. sandrii* (Küst.).

Siciliaria: *Cl. grohmanniana* (Partsch); all the species are from Sicily or Southern Italy.

Cristataria: *Cl. colbeauiana* (Parr.), *bigibbosa* (Charp.), and *strangulata* (Fér.); the species are from Syria, some of them dextral.

Albinaria: *Cl. cærulea* (Fér.), *lactea* (Ziegl.), *contaminata* (Parr.), &c.

Isabellaria: *Cl. isabellina* (Pfr.).

Dilataria: *Cl. succineata* (Ziegl.).

Uncinaria: *Cl. turgida* and *elata* (Ziegl.), top of clausilium uncinated.

Olympia: *Cl. olympica* (Friv.).

Graciliaria (Bielz): *Cl. concilians* (A. Schm.), *gracilis* (Pfr.), and *filograna* (Ziegl.).

Pyrostoma [this name is badly formed, *pirum*, pear, being a Latin, not a Greek noun; the name so formed and spelt signifies fire-mouth or wheat-mouth, but never pear-mouth, which ought to be *Apiostoma*; there exists already a name, formed by Hartmann, for this division, *Macrogastra*]: *Cl. latestriata* (Bielz), *ventricosa* (Drap.), *plicatula* (Drap.), &c.

Trigonostoma [name preoccupied as subgeneric for *Helix obvoluta*]: *Cl. bergeri* (Meyer).

Idyla (H. & A. Adams) : this name is restricted by v. Vest to *Cl. pagana* and *rugicollis* (Ziegl.).

Strigillaria: *Cl. cana* (Held) and *vetusta* (Ziegl.). The name *Iphigenia* (Gray) is restricted by v. Vest to *Cl. nigricans* (Pulteney) and the allied species; and the Recorder acknowledges to having been wrong in using it for the subgenus of the same type in his second edition of Albers. Gray himself (Proc. Zool. Soc. 1847, p. 177) states *biplicata* (Mont.) to be the type; therefore it is = *Alinda* (H. & A. Adams).

We mention the following species described by Schmidt:—*Clausilia polita* (Parr.), p. 36, Croatia and Abruzzi ?, circle of *laminata*; *eris*, sp. n., p. 80, Dalmatia, circle of *macarana*; *muraria* (Parr.), p. 85, Greece ?, circle of *grisea*; *schuchii* (Voith, teste Parreiss), p. 86, *massenæ* (Michaud ? teste Parreiss), p. 87, both of the same circle; *scopulosa* (Parr.), Zante, *castrensis* (Parr.), Palæocastris near Corfu, *inspersa* (Parr.), *liebetrati* (Charp.), *senilis* (Ziegl.), *modesta* (Ziegl.), *troglodytes* (Parr.), *straminea* (Parr.), Crete, *confinis* (Parr.), Syra Island, pp. 88–91, circle of *modesta*; *Cl. avia* (Parr.), *saxatilis* (Parr.), *indigena* (Parr.), Greece, pp. 94, 95, circle of *cærulea*; *abrupta* (Küst.), *angustata* (Parr. nec Bielz), Dalmatia ?, *cancellata* (Parr.), Spalato, pp. 97–100, circle of *exarata*; *clandestina* (Parr.) and *venusta*, sp. n., pp. 112 & 114, Greece, circle of *leucostigma*; *caucasica* (Parr.), p. 123, circle of *gracilis*; *lævicollis* (Parr.), p. 129, circle of *bicarinata*; *foveicollis* (Parr.), Ossetia in the Caucasus, p. 126, a solitary species near circle of *pikermiana*, Division V.; *lowei* (Albers) and *angulata* (Parr.), both from Madeira, p. 130, circle of *maderensis*; *comparata* (Parr.), Rumelia, p. 143, next to *plicata* (Drap.); *ossetica* (Parr.), Caucasus, p. 150, circle of *mœsta*; *bajula*, sp. n., p. 196, Rumelia, circle of *fallax*; *serrulata* (Mus. Petropol.), p. 197, a solitary species of Division V.; *litotes* (Parr.), Ossetia, *quadriplicata* (Parr.) and *subtilis* (Parr.), both from the Caucasus, pp. 162–164, forming a separate circle within Division VI.; *schwerzenbachii* (Parr.), p. 168, Division VI.

N.B. Most of the species named by Parreiss may be regarded as new, Parreiss having only named and sold, without describing them; others were introduced into scientific literature at earlier periods by Rossmässler and Pfeiffer.

The following known species are mentioned because Ad. Schmidt gives an accurate account of their varieties:—*bielzi* (Parr.) and *madensis* (Fuss), *l. c.* pp. 15–17, *laminata* (Mont.), p. 33, *ornata* (Ziegl.) and *itala* (Martens), pp. 45–47, *conspurcata* (Jan) and *decipiens* (Rossm.), pp. 51–58, *lævissima* (Ziegl.) and *pachygastris* (Partsch), pp. 66–68, *semirugata* (Ziegl.), *crassilabris* (Küst.) and *alschingeri* (Küst.), pp. 72 and 76, *dalmatina* (Partsch), p. 78, *leucostigma* (Ziegl.), pp. 108–110, *filograna* (Ziegl.), p. 120, *cana* (Held), p. 134, *vetusta* (Ziegl.), p. 136, *pagana* (Ziegl.) and *rugicollis* (Ziegl.), p. 137, *plicata* (Drap.), p. 141, *biplicata* (Mont.), pp. 137, 144–146, *corpulenta* (Friv.), and *mœsta* (Fér.), p. 149, *gracilicosta* (Ziegl.), p. 166.

Bourguignat has given a list of all the species of *Clausilia* known from Syria or Palestine, 34 in number, dividing them thus (Moll. Nouv. Lit. pp. 277, Rev. et Mag. Zool. xx. pp. 422–429) :—1. carinatæ: *bicarinata*, &c. 2. cærulescentes: *boissieri*, &c. 3. vesicantes: *vesicalis*, &c. 4. striatæ: *alberti*, *hedenbergi*, &c. 5. denticulatæ: *mœsta*.

Clausilia lucensis, sp. n., Gentiluomo, Bullett. Malacol. Ital. i. pp. 6, 36, pl. 1. figs. 1–3, Monsagrati near Lucca. *Cl. delicatæ* and *mamotica*, both

from Malta, established by Gulia in a work little known to conchologists, "Tentamen Ichthyologiæ Melitensis, 1861;" their descriptions reprinted in Bullett. Malacol. Ital. i. p. 21, and the latter figured pl. 2. figs. 4–6.—*Cl. isseli*, new name for *crenulata*, the *crenulata* of Risso and Bourguignat, but not of Ziegler, Rossmässler, and Pfeiffer, allied to *rugosa* (Drap.), from Nizza and Voltri: Villa, Bullett. Malacol. Ital. i. pp. 37–40, pl. 3. figs. 1–4.—*Cl. mofellana* (Parr.) is only a variety of *solida* (Drap.), Gentiluomo, ibid. p. 44, pl. 3. figs. 5–8.—*Cl. alboguttulata* (Wagn.), its varieties in Tuscany, ibid. p. 86.—*Cl. apennina*, sp. n., Issel, ibid. p. 87, pl. 5. figs. 11–14, Vallombrosa in Tuscany.

Clausilia tichobates (Parreyss), Dalmatia, and *Cl. gobanzi* (Parreyss), Styria, redescribed by L. Pfeiffer, Mal. Blätt. xv. pp. 60, 61.

Clausilia punica, sp. n., Bourguignat, Hist. Malacol. Tunis, p. 30, pl. 1. figs. 34–37, ruins of Utica.

Clausilia davidiana and *prophetarum*, spp. nn., Bourguignat, Moll. Nouv. Lit. fasc. ix. pp. 273 & 275, pl. 41. figs. 12–15 & 8–11, or Revue et Mag. Zool. xx. pp. 377, 378, pl. 16. figs. 8–11 & 12–15, Nahr-el-Kelb near Beirut.

Clausilia plicilabris, stimpsoni, stenospira, gouldi, proba, spreta, pinguis, and *lirulata*, spp. nn., A. Adams, Ann. & Mag. Nat. Hist. i. pp. 469–471, Japan.

Clausilia tuba, sp. n., Hanley, Ann. & Mag. Nat. Hist. i. p. 343, allied to *epistomium* (Küst.), valley of the Upper Salwen, Shan prov., British India.

Pupa psarolena (Bourguignat, 1859)=*Bulimus cinereus* (Mortillet, 1851)=*P. mortilleti* (Martens, 1860; Stabile, 1864)=*stabilei* (Martens, 1864), according to Stabile, Bullett. Malacol. Ital. i. p. 33.

Alloglossa, g. n. The lingual dentition resembles more that of the *Auriculidæ* than that of the other *Helicidæ*, and is described as follows:—Uncinus medius uncinis lateralibus primi ordinis minor, basi producta æquilatera, capite brevi, inflato, cuspide obtusa. Uncini laterales primi ordinis 18; forma simillima. Laterales secundi ordinis 12, basi brevi, lata, cuspide unica vel pluribus usque ad quatuor. Mandibulum marginibus rectilineis, infra irregulariter serrulatis, partes laterales latæ. The only species as yet known is *Pupa avenacea* (Bourg.). Lindström, Gotlands nutida Mollusker, pp. 16 & 18, pl. 1. figs. 11 & 13. *P. secale* (Drap.), although so similar in the shell, agrees with the other *Pupæ*, ibid. fig. 12, jaw.

Pupa gularis, var. *spoliata* (Rossm.), found in the Carpathian mountains by Dr. Jachno. Martens, Sitz.-Ber. Gesellsch. naturf. Freunde Berlin, 1868, p. 31.

Pupa ascaniensis (A. Schmidt) is identical with *costulata* (Nilss.), Reinhardt, ibid. p. 10, and Lindström, Gotl. nutid. Moll. p. 17.

Pupa (*Pupillo*) *exigua*, sp. n., H. Adams, Proc. Zool. Soc. 1868, p. 13, pl. 4. fig. 4, Mauritius.

Pupa uvulifera and *auriformis*, spp. nn., Guppy, Ann. & Mag. Nat. Hist. i. p. 441, and Transact. Scientif. Assoc. Trinidad, 1868, p. 243, Trinidad.

Pupa (*Vertigo*) *arctica* (Wallenberg) has been found in the mountains of Silesia, especially in a locality named "Kleine Schneegrube;" it has hitherto been only known from Lapland; in the same locality grow also some Arctic plants which do not occur in other parts of Germany, especially not in the Alps. Reinhardt, Sitz.-Ber. Gesellsch. naturf. Freunde Berlin, 1868, p. 10.

Pupa (*Vertigo*) *hoppii* (Möller)=*steenbuchii* (Beck), Greenland. Mörch, Am. Journ. Conch. iv. p. 30, pl. 3. figs. 6–9.

Pupa (*Alæa*) *borbonica*, sp. n., H. Adams, Proc. Zool. Soc. 1868, p. 290, pl. 28. fig. 8, Bourbon.

Pupa (sect. *Vertigo*) *kingi* (Cox) = *mastersi* (Cox), *nelsoni*, sp. n., *strangei* (Pfr.), *lincolniensis* (Cox), *margaretæ*, sp. n., and *moretonensis*, sp. n., Cox, Monogr. Austral. Land-sh. pp. 78–81, pl. 14. figs. 17, 19, 15, 16, 20, and 21; a dextral variety of *strangei*, fig. 18.

Pupa senegalensis (Morelet) found by Dr. Welwitsch in Loanda; *P. flocculus*, sp. n., on *Pistia stratiotes* in the lake of Quilunda, Angola. Morelet, Moll. terr. et fluv. Voy. Welwitsch, p. 81, pl. 3. fig. 4.

[*Pupa*, sect. *Leucochila*] *Bulimus chordatus*, Pfeiffer, Novitat. Conch. iii. p. 410, pl. 94. figs. 3–6, Mazatlan.

Pupa decumana (Fér.). The typical specimens of Férussac have been examined by H. Crosse, who states that they are identical with *P. regia* (Bens.), and with specimens from Castle Island, Bahamas, nearly allied to *weinlandi* (Kurr.), Journ. Conch. xvi. pp. 337–342.

Pupa (*Cylindrus*) *pulla* (Gray) = *cylindrica* (Hutt.) = *Bulimus agrensis* (Kurr.) = *Bul. chion* (Pfr.), according to E. v. Martens, Malakoz. Blätt. xv. p. 161.

Pineria vicquensis, Pfeiffer, Novitat. Conch. p. 408, pl. 93. figs. 39–41, Vieque and Barbados islands.

Elasmognatha.

Simpulopsis sulculosa (Fér.), from the inland region of Rio Grande do Sul; jaw not found; lingual teeth rather more agreeing with the *Orthalicea* [*Goniognatha*] than with the genus *Succinea*, described and figured by Heynemann, Mal. Blätt. xv. p. 111, pl. 5. fig. 10.

Succinea putris (L.), *pfeifferi* (Rossm.), *oblonga* (Drap.), and *arenaria* (Bouch.). The lingual teeth and jaws described and figured by Lindström, Gotl. nutida Moll. pp. 19–22, pl. 1. figs. 14, 15, pl. 2. figs. 1–8; shell of *S. arenaria*, fig. 3, of several varieties of *pfeifferi*, fig. 1 *a–g*; the last agrees in the jaw with *putris*, in the lingual teeth with the two others.

Succinea (*Lucena*) *grönlandica* (Beck), Greenland and Iceland, Mörch, Am. Journ. Conch. iv. pp. 31 and 42, pl. 3. fig. 10. "Among specimens from the latter place were several with a mandible like *S. putris*, with two small lateral denticles; but I cannot see any difference in the shell." A variety from Greenland comes very near to *S. lineata* (Binney).

Succinea badia, sp. n., Morelet, Moll. Terr. et Fluv. Voy. Welwitsch, p. 54, pl. 1. fig. 4, Angola.

Succinea australis (Fér.?, Q. & G.), from Tasmania, Cox, Monogr. Austr. Land-shells, p. 88, pl. 15. fig. 7; that described and figured by Gassies from New Caledonia is another species; *S. strigata* (Pfr.), *eucalypti* (Cox), *mortoni* (Cox), *macgillivrayi* (Cox), and *aperta*, sp. n., from King George's Sound, Cox, *l. c.* pp. 88–91, pl. 15, & pl. 17. fig. 6.

Amphibulima (Lam.). Mr. Guppy reestablishes this as a genus distinct from *Succinea* (Drap.) on account of its different lingual dentition, but without pointing out the difference; type *A. patula* (Brug.). He associates with it as subgenera *Omalonyx* (Orb.), type *unguis* (Fér.), and *Brachyspira* (Pfr.), type *tigrina* (Fér.). To the last belongs *A. pardalina*, sp. n., from Dominica. Ann. & Mag. Nat. Hist. i. p. 432.

Succinea (*Pellicula*) *convexa*, sp. n., Martens, Mal. Blätt. xv. p. 183, Porto Alegre, Southern Brazil. The jaw and lingual teeth are described and figured by Heynemann, ibid. p. 112, pl. 4. fig. 5, proving that *Pellicula* is not generically distinct from *Succinea*.

Athoracophorus hirudo, sp. n., Fischer, Journ. Conch. xvi. pp. 146 and 225, pl. 11, New Caledonia. Jaw as in *Succinea*, median teeth of the radula very small, the other tricuspidate. Mantle only indicated by a furrow, adhering to the common integument on all sides, a thick reniform internal shell. A cæcum of the intestine near the orifice of the two hepatic ducts. This genus is identical with *Janella* (Gray, which name is preoccupied by Grateloup, 1838, for a fossil shell), *Aneitea* (Gray), and *Triboniophorus* (Humbert). Six species are known at present, from Australia, New Zealand, the New Hebrides, and New Caledonia.

Limnophila.

Auriculidæ.

Carychium exiguum (Say), Northern, Middle, and Western States, Arkansas, Texas, Tryon, Am. Journ. Conch. iv. p. 6, pl. 1. fig. 3.

Carychium filicosta, sp. n., Morelet, Moll. terr. et fluv. Voy. Welwitsch, p. 84, pl. 3. fig. 3, Angola. [It is very doubtful whether this is a true *Carychium*.]

Pedipes lirata (Binney), Lower California, Tryon, Am. Journ. Conch. iv. p. 10, pl. 1. fig. 38.

Blauneria pellucida (Pfr.), Florida, also in a garden at Washington, Tryon, *l. c.* fig. 13.

Pedipes unisulcata, sp. n., Cooper, Proceed. Calif. Acad. Nat. Sci. vol. iii. part iv., California.

Alexia myosotis (Drap.), from New England and New York, Tryon, *l. c.* p. 6, pl. 1. figs. 1, 2.

Leuconia sayi (Küst.) unknown to American conchologists, Tryon, *l. c.* p. 10, pl. 18. fig. 12, copied from Küster's figure.

Melampus olivaceus (Carp.), Lower California; *bidentatus* (Say), Atlantic coasts of the United States; *flavus* (Gmel.) and *coffea* (L.), Florida. Tryon, *l. c.* p. 7, pl. 1. figs. 4–8.

Tralia pusilla (Gmel.), *cingulata* (Pfr.), and *floridana* (Shuttl.), all from Florida and the adjacent keys, Tryon, *l. c.* p. 9, pl. 18. figs. 9–11. This genus is distinguished from the preceding by the foot not being bifid posteriorly. [Pfeiffer has shown, Monogr. Auricul. p. 15, and Mal. Blätt. vi. 1859, p. 117, that this character is of little importance, and leads easily to misapplication].

Melampus striatus, Pease, Am. Journ. Conch. iv. p. 100, pl. 12. fig. 14, Tahiti.

Laimadonta [*Læmodonta*] *conica*, Pease, *l. c.* p. 101, pl. 12. fig. 15, Paumotu Islands.

Autonoë, g. n. "Closely allied to *Melampus* (Montf.) and *Laimodonta* (Nutt.), differing chiefly from the former in its thin and horny shell, and from the latter in its short spire and longer aperture." *A. riparia*, sp. n., both margins of the aperture without plaits, except the one common to all Auriculacea on the columella. Trinidad. Guppy, Transact. Scientif. Assoc. Trinidad, 1868, p. 244.

Limnæidæ.

Chilina fluminea (Maton) found at Porto Alegre by Dr. Hensel; jaw not found, lingual teeth disposed in angular rows, otherwise similar to those of the other Limnæidæ. Heynemann, Mal. Blätt. xv. p. 112, pl. 5. fig. 11.—*Chilina parva*, sp. n., Martens, ibid. p. 185, inland region of Rio Grande do Sul.

Limnæa stagnalis, var. *baltica*, small and brownish, somewhat similar to *palustris*, on the seashore of Gotland, and var. *lacustris* (Stud.) in the same island, Lindström, Gotlands nut. Moll. p. 22; *L. ovata* (Drap.), var. *succineæformis*, Lindström, ibid. p. 23, pl. 2. fig. 3.

Limnæa vatonni, sp. n., Bourguignat, Hist. Malacol. Tunis, p. 31, pl. 1. figs. 32, 33. Rivulets of lukewarm water in the Djerid, south of the regency of Tunis, and thermal springs in the oasis Ghadames.

Limnæa bocageana, sp. n., *benguellensis*, new name for *succineoides* (Morelet, Journ. Conch. 1866), *sordulenta*, sp. n., and *orophila*, sp. n., Morelet, Moll. terr. et fluv. Voy. Welwitsch, pp. 86, 87, pl. 7. fig. 3, pl. 6. fig. 4, pl. 7. figs. 5 and 4, Angola; the last on the Serra de Xella, 1400 metres above the sea.

Limnæa elodes is stated to be hatched from eggs of *L. catascopium*, when they happen to be in shallow water. Lewis, Am. Journ. Conch. iv. p. 4.

Limnæa (*Limnophysa*) *vahlii* (Beck), with some varieties, including *möllerí* (Beck), *pingelii* (Beck), and *wormskioldii*, Beck, Greenland, Mörch, Am. Journ. Conch. iv. p. 34, pl. 4. figs. 1–6; *L. holböllii* (Beck), Greenland, ibid. p. 36, pl. 4. fig. 8.

Pompholyx. Dr. J. E. Gray points out that the supposed second pair of eyes requires confirmation, and that the genus may belong to the *Auriculidæ*, Ann. & Mag. Nat. Hist. ii. p. 387.

Physa pisana (Issel, 1866). Its description reproduced in Bullett. Malacol. Ital. i. p. 6, pl. 1. figs. 7–8, Pisa.

Physa welwitschii (Morelet) and *angolensis*, sp. n., Morelet, Moll. terr. et fluv. Voy. Welwitsch, p. 88, pl. 7. fig. 9, and pl. 9. fig. 8, Angola.

Physa [group *Isidora*] *crystallina* and *capillacea*, spp. nn., Morelet, *l. c.* p. 89, pl. 9. fig. 1, and pl. 8. fig. 1, Angola.

Physa [turreted species] *canescens*, *apiculata*, *semiplicata*, *turriculata*, and *clavulata*, spp. nn., Morelet, *l. c.* pp. 90–93, with figures. Angola.

Physa guillaini, sp. n., *caledonica*, *hispida*, and *tetrica*, *nasuta* (Morelet) = *castanea* (Gassies, not Lam.), *obtusa* (Morel.), *auriculata* (Gass.), and *kanakina* (Gass.) described by Crosse, Journ. Conch. xvi. pp. 317–330, pl. 13. figs. 1–4.

Physa rivalis (Maton) = *orbignyana* (Shuttl.) = *jamaicensis* (Adams), Porto Alegre, Martens, Mal. Blätt. xv. p. 185.

Bulinus tryoni (Currier) not to be distinguished from *hypnorum* (L.), Lewis, Am. Journ. Conch. iv. p. 81.

Physopsis globosa, Morelet, Moll. Terr. et Fluv. Voy. Welwitsch, p. 93, pl. 9. fig. 4, Angola, in lakes.

Planorbis arcticus (Beck), Greenland, Tryon, Am. Journ. Conch. iv. p. 32, pl. 4. fig. 9, allied to *parvus* and *deflectus* (Say), of American, and to *dazuri* = *spirorbis* of Rossmässler, of European species.

Planorbis bourguignati and *paladilhi*, Moitessier, Hist. Malacol. du départ. de l'Hérault, pp. 52, 53, pl. 1. figs. 1–6 and 7–14, Montpellier.

Planorbis salinarum and *Pl. misellus*, spp. nn., Morelet, *l. c.* p. 85, pl. 5. figs. 4 and 5, Angola; the first allied to *marginatus* (Drap.), the second to *albus* (Müll.).

Planorbis lugubris (Wagner)=*bahiensis* (Dunker). The great affinity of specimens from Rio Janeiro with *Pl. tenagophilus* (Orb.) from Porto Alegre are pointed out by Martens, Mal. Blätt. xv. pp. 186–189. *Pl. purus*, sp. n., Martens, *l. c.* p. 190, inland region of Rio Grande do Sul.

Ancylus moricandi (Orb.), specimens from Porto Alegre described by Martens, *l. c.* p. 190.

Thalassophila.

Siphonariidæ.

Siphonaria diemensis (Q. & G.). Lingual dentition and jaw by Hogg, Transact. Roy. Microscop. Soc. xvi. pl. 13. fig. 75.

Siphonaria depressa, Pease, Am. Journ. Conch. iv. p. 99, pl. 11. fig. 23, paian Island, Polynesia.

PULMONATA OPERCULATA.

Cyclotacea.

Pterocyclus microchilus, sp. n., Crosse, Journ. Conch. xvi. p. 176, locality unknown.

Diadema, g. n. Testa globoso-turbinata, umbilicata; peristoma continuum, rectum, liberum aut vix adnatum, simplex, subcirculare. Operculum subcartilagineum, elevatum, spiraliter lamellatum, intus concavum, basi late reflexum. Differs from *Pterocyclos* by the simple lip. *D. parvum* (Pease, 1865, as *Pterocycl.*), Aitutake Island, and *D. rotella*, sp. n., Atiu Island, pl. 12. fig. 13, Pease, Am. Journ. Conch. iv. p. 157. [The name is preoccupied for a genus of Echinoderms.]

Cyclotus amethystinus, sp. n., Guppy, Ann. & Mag. Nat. Hist. i. p. 433, Dominica. Is undoubtedly a *Cyclophorus*, as proved by the author's description of the operculum. Bland, Am. Journ. Conch. iv. p. 190.

Cyclophorus aquila, from Burmah. Lingual membrane by Hogg, Transact. Roy. Microscop. Soc. xvi. pl. 8. fig. 17.—*C. layardi*, sp. n., H. Adams, Proc. Zool. Soc. 1868, p. 294, pl. 28. fig. 21, Ceylon.

Cyathopoma. W. T. Blanford modifies the diagnosis of the genus, and gives descriptions and figures of all the species known, viz.:—

a. Normales: *filocinctum* (Bens. as *Cyclostoma*), Nilgherries; *deccanense*, sp. n., Western Ghats; *wynaadense*, sp. n., Nilgherries; *kalryenense* (Blanf.), Southern India; *kolamulliense* (Blanf.), Southern India; *coonoorense*, sp. n., Nilgherries; *malabaricum* (Blanf.), Nilgherries, shell smooth. Journ. Conch. xvi. pp. 258–262, pl. 12. figs. 1–7.

b. Aberrantes: *procerum*, sp. n., Malabar, and ? *tignarium* (Bens.), Andaman Islands, ibid. pp. 262, 263, pl. 12. figs. 8 and 9.

Cyathopoma blanfordi, sp. n., H. Adams, Proc. Zool. Soc. 1868, p. 291, pl. 28. fig. 13, Seychelles.

Pupinea.

Hybocystis gravidum, from Moulmein. Lingual membrane and mandible by Hogg, Transact. Roy. Microscop. Soc. xvi. pl. 8. fig. 17.

Pupina planilabris (Pfr.) = *Pupinella whartoni* (Cox), *meridionalis* (Pfr.) = *Pupinella macgillivrayi* (Cox), *coxi* (Morelet), *bilinguis* (Pfr.), *wilcoxi* (Cox), *robusta* (Cox), *ventrosa* (Dohrn), *pineticola* (Cox), *thomsoni* (Forbes), and *pfeifferi* (Dohrn). Cox, Monogr. Austral. Land-shells, pp. 99–103, pl. 16.

Callia splendens (Dohrn), Cox, *l. c.* p. 104, pl. 17. fig. 8, Lizard Island, north-east coast of Australia.

Diplommatinacea.

Diplommatina folliculus (Pfr.), *huttoni* (Pfr.), *costulata* (Hutt.), *pachycheilus* (Bens.), *semisculpta*, sp. n., Blanf., *pullula* (Bens.), and *blanfordiana* (Bens.) figured by Austen, Journ. As. Soc. ii. 1868, pl. 1. figs. 1–8, all Himalayan; *D. diplocheilus* (Bens.), *scalaria*, sp. n., *labiosa*, sp. n., and *gibbosa*, sp. n., all from the Khasi Hills, figured, ibid. pl. 2. figs. 1–4; *D. polypleuris* (Bens.), *austeni*, sp. n., and *oligopleuris*, sp. n., also from the Khasi Hills, pl. 3. figs. 1–4; *D. sperata*, *puppensis*, *exilis*, and *nana* (Blanf.), from Burmah, pl. 4. figs. 1–4; the living animal of *Dipl. folliculus* (Hutt.), ibid. pl. 5. fig. 5. The new species are described by Blanford, ibid. pp. 78–82: the species of Southern India (subgen. *Nicida*) briefly characterized p. 82.

Diplommatina bensoni (A. Adams), Queensland, and *australiæ* (Bens.), Eastern Australia, Cox, Monogr. Austr. Land-shells, p. 96, pl. 16. fig. 1, and pl. 17. fig. 7.

Diplommatina minuta, sp. n., H. Adams, Proc. Zool. Soc. 1868, p. 16, pl. 4. fig. 15, locality unknown.

Diplommatina paradoxa (Crosse, Journ. Conch. 1867) identified by the author with *D. martensi* (H. Adams, Proc. Zool. Soc. 1866), Journ. Conch. xvi. p. 101.

Diplommatina, subgenus *Nicida*. Without vertical sculpture and without columellar tooth; type *D.* (*N.*) *nilgirica* (Blanf.): other species, *kingiana* (Blanf.), Southern India; *pulneyana*, sp. n., Southern India; *nitidula*, sp. n., Nilgherries; *fairbanki*, sp. n., Southern India; *liricincta*, sp. n., Western Ghats, with spiral ridges. Blanford, Journ. Conch. xvi. pp. 329–336, pl. 14. figs. 1–5.

Palaina coxi, sp. n., H. Adams, Proc. Zool. Soc. 1868, p. 16, pl. 4. fig. 14, Norfolk Island.

Cyclostomea.

Cyclostoma carinatum (Born) and *C. elegans* (Müll.). Lingual membranes by Hogg, Transact. Roy. Microscop. Soc. xvi. pl. 8. figs. 4, 5.

Tropidophora articulata (Sow.), from Rodriguez, ibid. fig. 12 [already figured by Woodward, Proc. Zool. Soc. 1859].

Tudora versicolor (Pfr.) is from Buen Ayre, one of the West-Indian islands. Bland, Am. Journ. Conch. iv. p. 192.

Cistula catenata (Gould). Hogg, Transact. Roy. Microscop. Soc. xvi. pl. 8. fig. 11. [The species does not occur in Germany, but in Cuba; the specimen was sent from Germany to Woodward.]

Chondropoma dentatum (Say), Key West, Florida, Tryon, Am. Journ. iv. p. 11, pl. 1. figs. 14–16.

Omphalotropis pfeifferi, sp. n., Crosse, Journ. Conch. xvi. p. 178, Lord-Howe Island, New Hebrides.—*O. borbonica*, sp. n., H. Adams, Proc. Zool. Soc. 1868, p. 292, pl. 28. fig. 14, Bourbon.

Pomatias. Some anatomical peculiarities are described by St. Simon, Nouv. Observat. sur les Pomatias du Midi de la France, Toulouse, 1868, 8vo. Abstract in Journ. Conch. xvi. p. 386.

Pomatias crassilabris, var. *barthelemiana*, St. Simon, *l. c.*, found at Cierp.

Pomatias atlanticus, sp. n., Bourguignat, Moll. nouv. lit. fasc. ix. p. 290, pl. 40. figs. 13–16, or Revue et Mag. Zool. xx. p. 430, pl. 15. figs. 13–16, Kabylie.

Truncatellidæ.

Acme (Hartm. 1821)=*Acicula* (Hartm. 1821)=*Pupula* (Agassiz, 1837). Paladilhe describes, in his monograph of this genus, Revue et Mag. Zool. xx., the following 12 species:—

1. Lævigatæ: *polita* (Pfr.), p. 233, pl. 13. figs. 1–3, Germany; *œdogyra*, sp. n., p. 236, figs. 4–6, from Kieco [Russia?]; *trigonostoma*, sp. n., p. 238, figs. 13–15, New Breisach, dép. du Haut Rhin.; *banatica* (Rossm.), p. 273, *dupuyi*, sp. n.,=*fusca* of most French authors, p. 274, figs. 10–12, different localities in France; *subdiaphana* (Bivona as *Bulimus*), pp. 277, Sicily.

2. Impresso-lineatæ: *lineata* (Walker), England, France, Germany, Northern Italy, p. 277; *lallemanti* (Bourg. 1864), Algeria, p. 321; *benoiti* (Bourg.), Sicily, p. 323.

3. Costulatæ: *spectabilis* (Rossm.), p. 325, figs. 7–9, Carniolia and Carinthia; *moutoni* (Dupuy), Grasse, in France, p. 327; *letourneuxi* (Bourg.), Algeria, p. 329.

Truncatella truncatula (Drap.). There is a complete passage from the costulated to the smooth specimens (*costulata* and *lævigata*). Weinkauff, Conch. d. Mittelm. ii. p. 317.

Truncatella teres (Pfr.), *marginata* (Küst.), *scalarina* (Cox), *yorkensis*, sp. n., *brazieri*, sp. n., and *ferruginea*, sp. n., Cox, Monogr. Austr. Land-sh. pp. 92–94, pl. 15; *Tr. pfeifferi* (Martens), from Shark Island, Port Jackson, *l. c.* p. 92.

Truncatella cristata and *arcasiana*, spp. nn., Crosse, Journ. Conch. xvi. p. 177; the second from the Feejee Islands, the locality of the first unknown.

Truncatella caribæensis (Sow.), *subcylindrica* (Gray), and *bilabiata* (Pfr.), Florida Keys; *pulchella* (Pfr.), Florida; *californica* (Pfr.), California. Tryon, Am. Journ. Conch. iv. pp. 14, 15, pl. 1. figs. 27–37.

Blanfordia striatula (Menke), Tasmania and Victoria, and *pyrrhostoma*, sp. n., Western Australia, Cox, *l. c.* p. 95, pl. 15. figs. 13 and 14.

Helicinidæ.

Helicina diversicolor (Cox), *draytonensis* (Pfr.), *reticulata* (Pfr.), *gladstonensis* (Cox), *fulgurata*, sp. n., *lizardensis*, sp. n., *yorkensis* (Pfr.), and *gouldiana* (Forbes), Queensland and North-east Australia. Cox, Monogr. Austral. Land-shells, pp. 105–108, pl. 17.

Helicina colorata, sp. n., Annaa Isl.; *parvula*, sp. n., Atiu Isl.; and *rugulosa*, sp. n., Tahaa Isl. Pease, Am. Journ. Conch. iv. p. 157, pl. 12. figs. 9–11.

Helicina epistilia, humilis, velutina, and *conuloides*, spp. nn., Guppy, Ann. & Mag. Nat. Hist. i. pp. 433–435, Dominica.—*Helicina ignicoma*, sp. n.,

Guppy, *l. c.* p. 441, and Proceed. Scientif. Assoc. Trinidad, 1868, p. 245, Trinidad.

Helicina carinata (Orb.). Some remarks on specimens from the inland region of Rio Grande do Sul, by Martens, Mal. Blätt. xv. p. 184.

Helicina orbiculata (Say), Tennessee, Mississippi, Georgia, Alabama, Florida, Texas; *occulta* (Say), recent in Wisconsin, Western Pennsylvania, and Virginia, posttertiary in Indiana, Ohio, &c.; *hanleyana* (Pfr.), New Orleans; *chrysochila* (Binney), Texas and Mexico; *subglobulosa* (Poey), Florida at Key Biscayne. Tryon, Am. Journ. Conch. iv. p. 13, pl. 1. figs. 17–26.

SOLENOCONCHÆ.

Dentaliidæ.

Jeffreys proposes to call the thread-like and extensile organs by which these mollusks seize their prey *captacula*, instead of *tentacula*, as they are unlike the tentacles of any Gastropod. Ann. & Mag. Nat. Hist. ii. p. 299.

The Mediterranean species are enumerated by Weinkauff, Conch. des Mittelm. ii. pp. 417–422, as follows:—*Dentalium tarentinum* (Lam.) distinct from *entalis* (L.), which is not Mediterranean; *D. dentalis* (L.); *D. novemcostatum* (Lam.); *D. rufescens* (Desh.); *Siphonodentalium quinquangulare* (Forbes); and *Dischides bifossus* (Wood), Algeria, on muddy ground, in 5–10 fathoms.

Dentalium entalis. Lingual dentition by Hogg, Transact. Roy. Microscop. Soc. xvi. pl. 13. fig. 76.

CONCHIFERA.

The orders and families of Conchifera are arranged by Prof. Hincks (Canadian Journal of Industry, Science, and Art, Dec. 1867) as follows:—

Ord. I. Asiphonida. Fam. *Ostreidæ*, *Mytilidæ*, *Aviculidæ*, *Pectinidæ*, *Arcadæ*.

Ord. II. Nayades. Fam. *Mulleridæ*, *Ætheriadæ*, *Anodontidæ*, *Trigoniadæ*, *Unionidæ*.

Ord. III. Brachysiphonida. Fam. *Chamidæ* (including *Hippurites* and *Tridacna*), *Lucinidæ*, *Cardiidæ*, *Cycladidæ*, *Cyprinidæ*.

Ord. IV. Macrosiphonida. Fam. *Myadæ* (including *Anatina*), *Solenidæ*, *Mactridæ*, *Tellinidæ*, *Veneridæ*.

Ord. V. Inclusa. "Families not well determined. *Gastrochænidæ* and *Pholadidæ* are generally recognized."

Tryon, Am. Journ. Conch. iv. p. 162, asks why the name Inclusa is substituted for Pholadacea. We may reply that this division was established as early as 1817 by Cuvier, under the French name *Enfermés*, including *Mya*, *Gastrochæna*, *Solen*, *Pholas*, *Teredo*, and *Fistulana*, whilst "*Pholadaires*" of Lamarck corresponds only to a subdivision.

INCLUSA, Cuv. (*Pholadacea*, Ad.).

Pholadidæ.

Teredo philippii (Gray). Its identity with *T. minima* (Blainv.) is doubtful. Hidalgo, Journ. Conch. xvi. p. 28.

Gastrochænidæ.

Fistulana lives in fine blackish sand, which is not muddy, in a vertical position; the front extremity is open in young specimens. Marie, Journ. Conch. xvi. pp. 139–141.

Solenidæ.

Solen exiguus (Dunker), var., Dunker, Novitat. Conch. part 13, pl. 39. fig. 1, Borneo.—*S. acutangulus*, sp. n., ibid. p. 117, pl. 39. fig. 2, Philippines.

Pharella ovalis (Dunker, 1861) figured, Novitat. Conch. pl. 39. fig. 4.

Aulus fasciatus (Spengler), Dunker, *l. c.* pp. 118, 119, pl. 39. figs. 5–7, locality not certain, said to come from Tunis.—*Au. winterianus* (Dunker, 1853), ibid. p. 120, pl. 39. figs. 8–9, Java.

Solecurtus multistriatus (Scacchi) recent in the Adriatic. Weinkauff, Conch. des Mittelm. ii. p. 435.

Azor (*Macha*) *scheepmakeri* figured by Dunker, *l. c.* pl. 39. figs. 10, 11.

Siliquaria nitidissima, sp. n., Dunker, *l. c.* p. 117, pl. 39. fig. 3, Peru.

Saxicavidæ.

Tryon enumerates, in his catalogue of this family (Appendix to Am. Journ. Conch. iv. pp. 59–61), eight species of *Saxicava*, eight *Glycymeris*, two *Panopæa*, two *Cyrtodaria*.

Panopæa plicata (Montagu), Spain and Algeria, Weinkauff, Conch. d. Mittelm. ii. p. 436 (*Sphenia binghami* of the first volume).

Myidæ.

Tryon enumerates, in his catalogue of this family (Appendix to Am. Journ. Conch. iv. p. 62), three species of *Mya*, one *Platyodon*, and six *Tugonia*.

Corbulidæ.

Tryon enumerates, in his catalogue of this family (Appendix to Am. Journ. Conch. iv. pp. 63–68), 73 species of *Corbula*, including *Azara*, four *Sphenia*, and eight *Cryptomya*.

Corbula (*Azara*) *rostrata*, sp. n., H. Adams, Proc. Zool. Soc. 1868, p. 293, pl. 28. fig. 19, Ceylon.—*C.* (*Potamomya*) *labiata*, Maton, including as varieties *C. nimbosa* (Sow.) and *ustulata* (Reeve), from Montevideo. Neither is from Singapore, as stated by Reeve and Tryon. Martens, Mal. Blätt. xv. p. 204.

Corbulomya steenstrupii, sp. n., Mörch, Vidensk. Meddelels. Vidensk. Foren. Kjöbenh. for 1867, p. 110, Iceland, nearly allied to *Ervilia castanea* (Mont.), but smooth; the genus, previously known from fossils only, may be regarded as an arctic representative of *Ervilia*.

Anatinidæ.

Conrad enumerates, in his catalogue of this family (Appendix to Am. Journ. Conch. iv. pp. 48–58):—37 species of *Anatina*; 1 *Pelopia* (H. Adams); 12 *Periploma*; 2 *Alicia* (Angas); 18 *Lyonsia*, including *Entodesma* (Phil.); 2 *Mytilimeria*; 4 *Cyathodonta* (Conrad); 27 *Thracia*; 1 *Asthenotherus* (Carp.); 1 *Pholadomya*; 3 *Poromya* (Forb.); 1 *Tyleria* (H. and A. Ad.); 21 *Necæra*; 1 *Plectodon* (Carp.); 4 *Myochama*; 1 *Chamostrea*.

Carpenter enumerates, in his Catalogue of the *Pandoridæ* (Appendix to

Am. Journ. Conch. iv. pp. 69–71) :—8 species of *Clidiophora*; 6 *Cœlodon*; 10 *Pandora*, including *Kennerlia* (Carp.); 12 *Myodora*.

Pelopia, g. n. External appearance of *Ixartia* (Leach)=*Rupicola* (Fleuriau de Bellevue); hinge similar to that of *Periploma* (Schumacher), but the ligamental process without strengthening rib, although prominent, and the beaks not fissured. *P. brevifrons*, sp. n., locality unknown. H. Adams, Proc. Zool. Soc. 1868, p. 16, pl. 4. fig. 16.

CARDIACEA, Cuv. (*Veneracea*, Ad.).

Mactridæ.

Mactra helvacea (Chemn.). Hidalgo doubts the identity of *M. glauca* (Born) with this species. Journ. Conch. xvi. p. 29.

Tellinidæ.

Tryon enumerates, in his catalogue of this family (Appendix to Am. Journ. Conch. iv. pp. 72–126), the following genera and species:—

Subfam. Tellininæ: 5 species of *Asaphis* (Modeer); 70 *Gari* (Schumacher) [concerning this name, see Zool. Record, vol. i.]; 4 *Sanguinolaria*; 39 *Hiatula*, including *Psammotea*; 2 *Elizia*; 271 *Tellina*, including the subgenera *Tellinella* (Gray), *Peronæoderma* (Mörch), *Mœra* (H. et A. Adams), *Arcopagia* (Leach), *Phylloda* (Schumacher), *Angulus* (Mühlf.), *Tellinides* (Lam.), *Homala* (Mörch), and *Peronæa* (Poli); 17 *Strigilla*; 3 *Capsa*; 85 *Macoma*; 2 *Œdalina*; 14 *Metis*; 3 *Tellidera*; 5 *Gastrana*; 6 *Lucinopsis*.

Subfam. Donacinæ: 92 species of *Donax*; 6 *Iphigenia*; 2 *Fischeria*; 16 *Galathea*.

Subfam. Scrobiculariinæ: 8 species of *Scrobicularia*; 2 *Leptomya*; 1 *Leiomya*; 7 *Theora*; 5 *Abra*=*Syndosmya* (Récl.); 70 *Semele* (Schum.)=*Amphidesma* (Lam.); 1 *Thyella* (H. Ad.); 14 *Cumingia* (Sow.).

Subfam. Paphiinæ: 11 species of *Paphia*; 4 *Mesodesma*; 4 *Ceronia*; 8 *Donacilla*; 2 *Anapa*; 3 *Davilla*; 5 *Ervilia*.

Tellina elliptica, reticulata, tenuilirata, brevirostrata, sublenticularis, obliquistriata (Kingsmill Island), *subtrigona, tenuisculpta, declivis, cerasum, opalina, elevata, cuneolus, armata, æquistriata, striatissima, producta, myæformis, obtusa, belcheri, ensiformis, fijensis, crebrimaculata, plena, mactræformis*, and *succinea*, spp. nn., Sowerby, in Continuation of Reeve's Conchologia Iconica, parts 270, 271; the localities of most of them are not known.

Donax atlantica. This name is cancelled by G. Hidalgo and that of *vittatus* (Da Costa) adopted, Journ. Conch. xvi. p. 30.

Galatea philippiana (Morelet, 1858)=*læta* and *rubicunda* (Philippi, 1848), and *G. bernardi* (Dunker), both in the river Bengo. Morelet, Moll. Terr. et Fluv. Voy. Welwitsch, p. 99.

Scrobicularia (*Capsa*) *rostrata*, sp. n., H. Adams, Proc. Zool. Soc. 1868, p. 292, pl. 28. fig. 15, Seychelle Islands.

Veneridæ.

Dr. Pfeiffer calls the attention of conchologists to the inequality of the posterior area in the valves of some species of *Venus*, as *casina, verrucosa, rugosa, gravescens, isabellina*, &c., and also of some species of *Dosinia*, as *grata* and *trailli* (A. Adams); the two last are fully described by him; he

adds some historical remarks on the genus *Dosina* as established by Dr. Gray in 1838, which comprises several of the species of *Venus* mentioned above, and is wholly distinct from *Dosinia* of Scopoli and of Gray in 1847 and later. Mal. Blätt. xv. pp. 143–148.

Venus, subgen. *Cytherea* (Lam.), sect. *Dione* (Gray). A. Shell with elevated concentric ribs: *dione* (L.), *lupanaria* (Less.)=*semilamellosa* (Gaud.) =*exspinata* (Reeve), *multispinosa* (Sow.), *brevispinosa* (Sow.), and *rosea* (Brod.)=*lepida* (Chenu), all these with spines or nodules along the area; *circinata* (Born), *alternata* (Brod.), *concinna* (Sow.)=*affinis* and *tortuosa* (Brod.), *philippinarum* (Hanley)=*mendanæ* (Phil.); all described and figured by Ed. Römer, Monogr. pp. 127–140, pls. 34–37.

Subsect. *Amiantis* (Conrad): *D. callosa* (Conrad)=*nobilis* (Reeve), Römer, pp. 140–142, pl. 38. fig. 1.—B. Shell in the middle part smooth: *D. purpurata* (Lam.) and *D. unicolor* (Sow.)=*badia* (Gray)=*ligula* (Anton). Römer, pp. 143–145, pl. 39. figs. 1 and 2.

Sect. *Lioconcha* (Mörch), with a very small palliar sinus: *L. arabica* (Chemn.), including as variety *doritis* (Römer); *callipyga* (Born), *adansoni* (Phil.), *funiculata* (Römer), *pulchra* (Desh.), *limenia* (Römer), *lentiginosa* (Chemn.), *splendida* (Sow.), *semiarata* (Dunker), *castrensis* (L.), *fastigiata* (Sow.), *sphragitis* (Römer), *tigrina* (Lam.), *picta* (Lam.), *sulcatina* (Lam.), *trimaculata* (Lam.), *sowerbyi* (Desh.), *hieroglyphica* (Conrad), and *cyrilli* (Scacchi). Römer, pp. 147–171, pls. 40–46.

Some figures of *Venus*, in the conchological work of Martini and Chemnitz, are determined by Dr. Pfeiffer, especially figs. 287–290 of the sixth volume, as *V. anadyomene* (Anton in 1839)=*isabellina* (Philippi, 1848), and *V. lamellosa*, Chemnitz, figs. 293, 294=*gravescens* (Menke). Mal. Blätt. xv. pp. 148–155.

Venus australis, sp. n., Philippi, Mal. Blätt. xv. p. 225, Straits of Magellan.

Tapes aureus, var. *elongata*, from the basin of Arcachon in France, Desmoulins (Actes de la Société Linnéenne de Bordeaux, 1868?), Journ. Conch. xvi. p. 372.

Tapes beudantii (Payr.) is perhaps a variety of *floridus* (Poli); its differences from *virgineus* and that of *pullastra* (Mont.) from *geographicus* are pointed out by Hidalgo, Journ. Conch. xvi. pp. 30–32.

Cyrenidæ.

Cyrena saulcyi, sp. n., Bourguignat, Moll. nouv. lit. fasc. x. p. 315, pl. 45. figs. 6–9, Jordan.

Pisidium steenbuchii (Möller), closely allied to *pulchellum*, Jenyns, Greenland, Mörch, Am. Journ. Conch. iv. p. 37, pl. 4. fig. 10.

Pisidium insigne, sp. n., Gabb, ibid. p. 69, pl. 2. fig. 2, Fort Tejon, California.

Cardiidæ.

Cardium norvegicum (Spengl.). Living specimens observed in the aquarium at Arcachon; makes considerable leaps. Crosse, Journ. Conch. xvi. p. 6.

Cardium ciliare (Linné, not Reeve) is=*paucicostatum* of Sowerby and Reeve; *C. deshayesii*, Payr., is a variety of *echinatum* (L.); *tuberculatum* (L.), this name to be restored for *rusticum* (L., Reeve); *exasperatum* (Sow.),

the lunule is formed by the left valve only; *pseudolima* (Lam.), much more rarely white than pink; *nodosum* (Mont.) is perhaps not=*roseum* (Lam.), or *punctatum* (Brocchi), or *scabrum* (Phil.); *exiguum* (Gmel.)=*stellatum* (Reeve); *rubrum* (Reeve)=*fasciatum* (Mont.); *suecicum* (Lovén) is distinct from *minimum* (Phil.); *edule* (L.), to its varieties belong also *lamarckii* (Reeve), *balticum* (Beck, Reeve), and *rusticum* (Chemn. not L.); *californiense* (Desh.)=*pseudofossile* (Reeve), very near to *ciliatum* (Fabr.); *muricatum* of Chemnitz and other authors perhaps not=*muricatum* of Linné; *flavum* (L.) =*rugosum* (Lam.); *procerum* (Sow.), a variety of it is *laticostatum* (Sow.); *coronatum* (Spengler)=*fimbriatum* (Reeve); *radiatum* (Reeve) seems to be a variety of *tenuicostatum* (Lam.); *bullatum* of authors perhaps not=*Solen bullatus* of Linné; *ringiculum* (Sow.) comes from the West Indies; *rugatum* (Gronov.)=*apertum* (Chemn.); *muticum* (Reeve)=*papyraceum* (Sow.)= *japonicum* (Dunker); *norvegicum* (Spengl.)=*lævigatum* of Pennant not Linné =*vitellinum*; *pennanti* and *oblongum* of Reeve to be distinguished from the Mediterranean *oblongum* (Chemn.)=*flavum* (Born)=*sulcatum* (Lam.); *elenense* (Sow.) and *oviputamen* (Reeve) shortly characterized; *lævigatum* of Reeve is probably not that of Linné, and may be called *glabratum*; *pectinatum* (L.) probably not=*æolicum* (Born); *grönlandicum* (Chemn.), the young of it is *boreale* (Reeve); *medium* of Linné is probably that of Chemnitz and other authors; *tumoriferum* of Reeve is not that of Lamarck; *guichardi* (Bernardi) from New Caledonia briefly described; *donaciforme* (Spengl.), a variety of it is *australiense* (Reeve); *subretusum* (Sow., Reeve) is only a variety of *retusum* (L.), but *auricula* (Forsk.) is a distinct species. E. Römer, Mal. Blätt. xv. pp. 85–99.

Tridacnacea.

Tridacna gigas, elongata, squamosa, crocea, and *serrifera,* Küster, Conch. sect. 55, pp. 3–7, pls. 1 & 2.

Hippopus maculatus, Küster, ibid. p. 8, pl. 3.

MYTILACEA, Cuv. (*Lucinacea,* Ad.).

Kelliidæ.

Montacuta tumidula and *donacina* (Se. Wood) dredged among the Shetland Islands. Jeffr. Ann. & Mag. Nat. Hist. 1868, ii. p. 299.

A bivalve mollusk, the shell of which is stated to be entirely enclosed in the mantle, found on Holothuriæ in the Philippines by Dr. C. Semper. Reisen in den Philippinen, vol. i. Holothurien, p. 99.

Galeommidæ.

Thyreopsis, g. n. Testa æquivalvis, æquilateralis, trigono-ovata, aperta; margine dorsali convexo, ad umbones subacuto. Cardo edentulus, ligamento interno sub umbonibus instructus. *Th. coralliophila,* sp. n., Mauritius. H. Adams, Proc. Zool. Soc. 1868, p. 14, pl. 4. fig. 8.

Unionidæ.

Unio. The monograph of this genus is continued by Sowerby in Reeve's Conchologia Iconica, parts 268–273, pls. 61–84.—Several observations and corrections concerning the North-American species treated of in this monograph are given by G. Tryon, Am. Journ. Conch. iv. pp. 165 & 283.

A list of ten inequivalve *Unionidæ*, seven of which are from Central America, is given by Is. Lea, Proc. Ac. Nat. Sc. Philad. 1868, p. 95.

Unio lawleyianus, sp. n., Gentiluomo, Bullett. Malacol. Ital. i. pp. 54–58, pl. 4. figs. 1–3, Lucca.—*Unio mauritanicus*, sp. n., Bourguignat, Moll. nouv. lit. fasc. x. p. 317, pl. 45. figs. 1–5, Oran, Algeria.

Unio ægyptiacus (Cailliaud) found in the river Niger by Welwitsch, Morelet, Moll. Terr. et Fluv. Voy. Welwitsch, p. 97.

Unio chinensis, sp. n., Lea, *l. c.* p. 150.

Unio douglasiæ (Gray in Griffith, An. Kingd.) = *U. murchisonianus* (Lea). Mr. Lea claims priority for his name as it is contained in a paper *read* before the Am. Phil. Soc. in 1832 [but the volume of the Transactions in which it was *published* did not appear before 1837].—*U. subtortus* (Baird & Adams, 1867) = *tortuosus* (Lea, 1865), and perhaps = *tientsinensis* (Crosse & Debeaux, 1863). Lea, *l. c.* pp. 145, 146.

Unio rectilinearis and *digitiformis*, spp. nn., Sowerby in Reeve's Conch. Ic. parts 268, 269, India.

Unio murrayensis, Murray County, Georgia; *fassinans* [?], headwaters of Holston River, Virginia; *sparus*, Swamp Creek, North Georgia; *copei*, headwaters of Holston River; *cylindrellus*, Tennessee, Georgia, and North Alabama; *difficilis*, Swamp Creek and Holston River; *topekaënsis*, Topeka, Kansas; *brazosensis*, Brazos River and Dallas Co., Texas; *lincecumii*, Texas; *corvinus*, Georgia and North Carolina; *corvunculus*, Flint River, Georgia; *planior*, Tennessee and Virginia; *vallatus*, Alabama River; *refulgens*, Oktibehha River, Miss.; *uhareensis*, Uharee River, North Carolina; *sphæricus*, Pearl River, Miss., are species described as new by Lea, *l. c.* pp. 143–145.—*U. dorsatus, latus, beaverensis, nubilus, parvensis, humerosus*, and *genuinus*, spp. nn., Lea *l. c.* pp. 160, 161, North Carolina.—*U. rivicolus*, sp. n., Conrad, ibid. p. 280, pl. 8. fig. 4, Florida.

Unio ligamentinus, its variability. Lewis, Am. Journ. Conch. iv. p. 81.

Unio nicaraguensis, granadensis, encarpus, and *gabbianus*, spp. nn., all from Lake Nicaragua, Lea, *l. c.* p. 95.—*U. veracruzensis*, sp. n., Lea, *l. c.* p. 150, Vera Cruz.—*U. ortonii* and *napoënsis*, spp. nn., Lea, *l. c.* pp. 161, 162, River Napo, Ecuador.

Unio delodon (Lam.) = *lacteolus* (Lea) = *wymani* (Lea), *U. multistriatus* (Lea) = *psammactinus* (Bronn), and *U. rhyacœcus* (Orb.). An account of these species from specimens collected at or near Porto Alegre by Dr. Hensel, with references to some other allied species, is given by Martens, Mal. Blätt. xv. pp. 193–196.—*U. bulloides* (Lea) = *Mya variabilis* (Maton), ibid. p. 217.

Unio prunoides, sp. n., Lea, *l. c.* p. 150, and *U. sagrinatus*, sp. n., Sowerby in Reeve's Conch. Ic. no. and fig. 343. Localities of both unknown.

Castalia pazi, sp. n., Hidalgo, Journ. Conch. xvi. p. 353, pl. 13. fig. 6, Imbabura in Ecuador.

[*Barbala*] *Dipsas discoidea* (Lea, 1833) = *Anodonta tenuis* (Gray in Griffith's Animal Kingdom). Lea claims also here priority [see *Unio douglasiæ*]. Proc. Ac. Nat. Sc. 1868, p. 146.

[*Barbala plicata.*] Dr. Pfizmaier has collected and translated the passages in Chinese literature in which the pearl is mentioned. He comes to the conclusion that nearly always pearls from freshwater shells are referred to. Sitz. philos.-hist. Classe d. Akad. d. Wiss. Wien, Dec. 1867, pp. 617–654.

Anodonta chaiziana (Rang) found by Dr. Welwitsch in the river Niger. Morelet, Moll. Terr. et Fluv. Voy. Welwitsch, p. 97.

Anodonta strebelii, sp. n., Lea, *l. c.* p. 150, Vera Cruz.

Anodonta bridgesii, *inæquivalvis*, *jewettiana*, *lenticularis*, and *granadensis*, spp. nn., all from Lake Nicaragua. Lea, *l. c.* pp. 95, 96.

Anodonta gigantea (Spix), *A. exotica* (Lam.), *A. latimarginata* (Lea) = ? *patagonica* (Lam.), and *A. tenebricosa* (Lea) described from South-Brazilian specimens and compared with several other allied species by Martens, Mal. Blätt. xv. pp. 196–201 & 217. The South-American species are distributed in four groups,—rotundatæ, latimarginatæ, angulatæ, and ensiformes, pp. 210, 211.—Five species from South America are figured in Sowerby's Continuation of Reeve's Conch. Ic.

Leila castelnaudii (Hupe) described from specimens from the Jacuhy River in Southern Brazil, by Martens, *l. c.* pp. 201, 202.

Mycetopus (Orb.). This genus is treated of in Sowerby's continuation of Reeve's Conchologia Iconica, parts 269, 270, & 272, and illustrated by four plates.—*M. plicatus*, sp. n., Sow. *l. c.*, Victoria River, Australia; *M. subsinuatus*, sp. n., Sow. *l. c.*, New Granada.—*Mycetopus falcatus*, sp. n., Higgins, Proc. Zool. Soc. 1868, p. 179, pl. 14. fig. 6, Chyavetas, Upper Amazons. [Similar to the Siamese *M. emarginatus*, Lea.]

Solenaia, g. n., for *Mycetopus emarginatus* (Lea). Conrad, Am. Journ. Conch. iv. p. 249.

Iridina. This genus is treated in Sowerby's continuation of Reeve's Conchologia Iconica, parts 268, 269, with two plates.—*I. angustata*, sp. n.

[*Spatha*] *Iridina rubens* from the Niger is not to be distinguished specifically from that of the Nile.—*I. welwitschii*, sp. n., River Muria, Angola. Morelet, Moll. Terr. et Fluv. Voy. Welwitsch, pp. 98, 99. [The latter is analogous to *Sp. arcuata* (Fér.) from the upper Nile.]

Ætheriidæ.

Ætheria plumbea (Fér.) = *transversa* and *semilunata* (Lam.) = *carteroni* (Michelin), River Lucala, Angola. Morelet, *l. c.* p. 100.

Mytilidæ.

Mytilus crassitesta, sp. n., Lischke, Mal. Blätt. xv. p. 221, Japan; allied to *giganteus* (Holmberg), which occurs also in Japan.

Mytilus exustus (L.) = *domingensis* (Lam. ?, Orb.), from Montevideo, compared with *M. darwinianus* (Orb.). Martens, Mal. Blätt. xv. p. 205.

Modiola antarctica, sp. n., Philippi, Mal. Blätt. xv. p. 224, Straits of Magellan; resembling young specimens of *M. barbata* (L.).

Dreissenidæ.

Dreissena polymorpha (Pall.). See Acclimatization, p. 443. Gassies observed that the animal voluntarily breaks the threads by which it has attached itself, and creeps about by stretching and shortening its foot, somewhat like a leech. Journ. Conch. xvi. pp. 24–27.

Aviculidæ.

Vulsella and *Crenatula*. The characters of the mantle, the bisymmetrical structure of the ligament, and the development of the elongated foot without byssus are essentially the same in both genera. *Vulsella* approaches nearer to

the oysters, but is distinguished from them by its foot. *Avicula* is, among the *Malleacea*, nearest to *Mytilus*, and agrees with *Malleus* and *Perna* in the possession of a byssus. Vaillant, Compt. Rend. 1868, pp. 1122–1125, or Ann. Sci. Nat. ix. p. 281.

Pinna rudis. Hidalgo maintains the distinctness of this species from the European *P. pectinata*, Journ. Conch. xvi. p. 33.

OSTREACEA, Cuv. (*Pectinacea*, Ad.).

Trigonia. Dr. E. Selenka has given an account of the anatomy of this genus, Mal. Blätt. xv. pp. 66–72, pls. 2–3.

Arca diluvii. The young shell is provided with longitudinal radiating furrows; this is *A. didyma* (Brocchi); and there is a variety with very large area, and therefore very distant summits, named *A. weinkauffi* by Crosse. Such individual varieties occur also in other species of *Arca* and in other genera, which are fixed in narrow places between stones, in clefts of rocks, and therefore compelled to adapt their growth to the locality. Tiberi, Journ. Conch. xvi. pp. 81–84.—Weinkauff maintains the distinctness of this species from *diluvii*. Conch. d. Mittelm. ii. p. 439.

Arca constricta, martensii, and *signata*, spp. nn., Dunker, Novitat. Conch. part 13. pp. 111, 112, pl. 37. figs. 17, 18, pl. 38. figs. 1–3 & 5, localities not known.—*A. maculata* (Reeve) figured, ibid. pl. 37. figs. 14–16.

Barbatia oblonga, sp. n., Dunker, *l. c.* p. 107, pl. 37. figs. 1–3, New Holland.—*B. oblonga*, sp. n., Dunker, *l. c.* figs. 4–7, Philippines.—*B. solidula*, sp. n., Dunker, *l. c.* p. 114, pl. 38. figs. 10–13, California.

Anomalocardia æquilatera, sp. n., Dunker, *l. c.* p. 109, pl. 37. figs. 11–13, Indian Ocean.—*A. pulchella*, sp. n., Dunker, *l. c.* p. 113, pl. 38. figs. 6–8, and *lischkei*, sp. n., p. 115, pl. 38. figs. 14–16, localities not known.—*A. ehrenbergi*, sp. n., ibid. p. 116, pl. 38. figs. 17, 18, Red Sea.

Scapharca pumila, sp. n., Dunker, *l. c.* p. 108, pl. 37. figs. 8–10, locality not known.

Pectunculus. Weinkauff thinks it best to cancel the Linnean name *P. pilosus*, which most authors use for *P. glycymeris*, and he considers *P. bimaculatus* (Poli)=*glycymeris* (Phil.)=*siculus* (Reeve) to be a distinct species. Conch. d. Mittelm. ii. pp. 437–439.

Cyrilla sulcata (A. Adams), Straits of Korea and Gotto Islands, figured, Journ. Conch. xvi. pl. 4. fig. 2.

Sarepta speciosa (A. Adams), Straits of Korea, figured, Journ. Conch. xvi. pl. 4. fig. 1.

Pecten maximus (L.). Its locomotion through the water, by alternately opening and closing the valves, is described by Crosse, Journ. Conch. xvi. p. 6.

Spondylus cruentus, sp. n., Lischke, Mal. Blätt. xv. p. 221, Nagasaki.

BRACHIOPODA.

Terebratula cubensis, sp. n., Pourtales, Bull. Mus. Anat. Comp. 1868, p. 109, off Havana, in 270 fathoms.

Terebratulina cailleti, sp. n., id. ibid., West Indies.

MOLLUSCOIDA

BY

E. Perceval Wright, M.A., M.D., F.L.S.

Review of Publications.

Danielssen, D. Om to nye Arten Bryozoer. Vidensk. Selsk. Forhand. 1867, pp. 24–25.

Gray, J. E. Note on *Oculinaria*, a new genus of Social Ascidians. Proc. Zool. Soc. Lond. 1868, p. 564.

Hyatt, A. Observations on Polyzoa, suborder Phylactolæmata. 8vo, Salem, 1866–68, with 9 plates, pp. 1–104.

(A portion of this treatise, now separately printed, was noticed in last year's 'Record' as published in the 'Proceedings of the Essex Institute.') Contains, besides an introductory chapter, one on the bibliography and classification of the Phylactolæmata, a general description of the genera, and an account of the general anatomy and physiology of the group. Several new species are also described from America. These will be found detailed in the special part.

Kowalevsky, A. Entwickelungsgeschichte der einfachen Ascidien. Mém. Acad. Imp. des Sciences de St. Pétersbourg, tome x. no. 15, 1866. 4to, pp. 1–16, Taf. 1–3.

Nitsche, H. Beiträge zur Anatomie und Entwickelungsgeschichte der Phylactolæmen Süsswasserbryozoen, insbesondere von *Alcyonella fungosa*. (Inaugural Dissertation.) Berlin, August 1868, 8vo, pp. 1–57, with 4 plates and 2 woodcuts. Also Reichert u. Du Bois-Reymond's Archiv, 1868, pp. 465–521, Taf. 11–14.

In this interesting thesis we find a very full account of the intimate structure of *Alcyonella fungosa* and of its statoblasts. The author regards the comparison of the ectocyst of the Polyzoa with the mantle of the Tunicata as scarcely trustworthy; but in treating of the general homologies he would appear not to have seen Mr. Hancock's later paper on the Tunicata.

Norman, A. M. Notes on some British Polyzoa, with descriptions of some new species. Quart. Journ. Micr. Science, vol. xvi. (1868) pp. 212–222, pls. 5, 6, 7.

Smitt, F. A. Kritisk förteckning öfver Skandinaviens Hafs-Bryozoer. Œfversigt af Kongl. Vetenskaps-Akademiens Förhand. 1867 (read December 16, 1867), conclusion, pp. 3–230, Taf. 24–28, 3 plates double.

TUNICATA.

Development.—Phallusia mammillata, Cuv., and *Ascidia intestinalis*, L. Kowalevsky (*l. c.*), after alluding to the researches on the development of the Ascidia by Milne-Edwards, Van Beneden, Kölliker, and especially of Krohn, remarks that the results of his researches correspond more with those obtained by Krohn. Still he has been able to do more than Krohn, in that he has watched the development step by step, from the earliest stage of the ovum, through the segmentation stage to the complete development of the young form, and has also seen the gradual building up of the alimentary tract. The earlier stages up to the larval form were chiefly studied in the first-mentioned, and the fixed condition chiefly in the latter-mentioned species; the development of the ova of many species appears to be very similar.

Oculinaria, g. n., Gray, *l. c.* p. 564. Mass cylindrical, about 8 inches long and 1¼ inch in diameter in spirits. It is white, with ends rather tapering and rounded, and consists entirely of a large number of more or less oblong cysts, placed closely side by side on every side of an imaginary central axis, the cysts covering the ends of the mass like the rest of the body. The cysts are hard, cartilaginous, rather convex externally, with two concavities having an opening at the base of each. The apertures are slightly raised round the edge; and the centre is closed with four short valves, leaving a stellate four-rayed aperture. The outer surface of the cyst is covered with a thick hard skin, strengthened externally with imbedded particles of sand, which are more abundant and clustered in certain parts, especially in those sunk below the general level of the surface. The animal is full of sand. *O. australis*, sp. n., Gray, *l. c.* p. 564, fig. 1, Freemantle, Australia.

POLYZOA.

Phylactolæmata.

Cristatella ophidioidea, sp. n., Hyatt, *l. c.* p. 101.

Pectinatella magnifica, sp. n., Hyatt, *l. c.* p. 99, pl. 10. figs. 3, 4, Cambridge, Mass.

Pectinatella carteri, Hyatt, *l. c.* p. 7, footnote. Proposed for a species of which the statoblast has been described by Carter from Bombay (Ann. & Mag. Nat. Hist. 1859, vol. iii. p. 341, pl. 8. figs. 8–15) as belonging to *Lophopus crystallinus*.

Alcyonella fungosa. Parfitt describes a variety found near Exeter which

would appear to be somewhat intermediate between the typical *A. fungosa* and *A. benedeni*. Ann. & Mag. Nat. Hist. July 1869, vol. ii. p. 71.

Plumatella arethusa, sp. n., Hyatt, *l. c.* p. 95, pl. 8. figs. 1, 2, Maine and Massachusetts; *P. vitrea*, sp. n., Hyatt, *l. c.* p. 96, pl. 9. figs. 1, 2, Cambridge, Massachusetts.

Fredericella walcottii, sp. n., Hyatt, *l. c.* p. 90, pl. 15. fig. 2, Georgetown, Massachusetts; *F. pulcherrima*, sp. n., Hyatt, *l. c.* p. 91, pl. 15. fig. 3, White's Bridge, Lake Sebago, Maine; *F. regina*, sp. n. (Leidy, MS.), Hyatt, *l. c.* p. 91, pl. 7. fig. 1, very generally distributed in North America and subject to great variety.

Claparède's description of *Loxosoma kefersteinii* will be found translated in Ann. & Mag. Nat. Hist. vol. i. 1868, p. 311.

Gymnolæmata.

Smitt, it will be seen from the following list of species and their synonyms, groups all the forms resembling each other into species, and then arranges the varied forms, which are often the species of other authors, into sections. This will be better understood by the following example :—

Mollia vulgaris (Moll.), typical form = *Eschara vulgaris*, Moll.
Forma *spinifera* = *Lepralia spinifera*, Johnst., and synonyms.
Forma *ansata* = *L. ansata*, Johnst., and synonyms.
Forma *papillata* = *L. papillata*, Busk.
Forma *candida* = *L. candida*, Stimpson.

Smitt, in continuation, describes in detail the following species :—

Eschariporidæ (*l. c.* pp. 3-8 & 48-70) :—

Escharipora figularis (Johnst.), Smitt, *l. c.* pp. 4 & 49, Taf. 24. figs. 2, 3; *E. punctata* (Hass.) (= *Lepralia cribrosa*, Bœck), Smitt, *l. c.* pp. 4 & 51, Taf. 24. figs. 4–7; *E. annulata* (Fabr.), Smitt, *l. c.* pp. 5 & 53, Taf. 24. figs. 8–10.

Porina malusii (Aud.) (= *Lepralia biforis*, Johnst.), Smitt, *l. c.* pp. 5 & 56, Taf. 24. figs. 11, 12; *P. ciliata* (Pall.) (= *Flustra genisii*, Aud., = *L. insignis*, Hass., *L. pustula*, Dalyell), Smitt, *l. c.* pp. 6 & 58, Taf. 24. figs. 13–19.

Anarthropora monodon (Busk), Smitt, *l. c.* pp. 8 & 64, Taf. 24. figs. 20–24; *A. borealis* (Busk) (= *Pustulipora gracilis*, Sars, = *Onchopora borealis*, Busk), Smitt, *l. c.* pp. 8 & 67, Taf. 24. figs. 25–29.

Myriozoidæ (*l. c.* pp. 8–19 & 70–122) :—

Escharella porifera, sp. n., Smitt, *l. c.* pp. 9 & 70, Taf. 24. figs. 30–41, Spitzbergen (? = *Eschara foliacea* and *E. landsborovii*, Alder); *E. palmata* (Sars), Smitt, *l. c.* pp. 10 & 77, Taf. 24. figs. 42–46; *E. legentilii* (Aud.) (= *Lep. reticulata*, M'Gill), Smitt, *l. c.* pp. 10 & 81, Taf. 24. figs. 47–52; *E. jacotini* (Aud.) (= *Discopora trispinosa*, Johnst., = *Lep. variolosa*, Johnst.), Smitt, *l. c.* pp. 11 & 86; *E. auriculata* (Hass.), Smitt, *l. c.* pp. 12 & 90; *E. landsborovii* (Johnst.), Smitt, *l. c.* pp. 12 & 92; *E. linearis* (Hass.) (= *Lep. hastata*, Hincks, = *Eschara biaperta*, Mich.), Smitt, *l. c.* pp. 13 & 95.

Mollia vulgaris (Moll.) (= *Cellepora coccinea*, Lov., = *Lep. ciliata*, Hass., = *Lep. unicornis*, Johnst., = *Lep. spinifera*, Johnst., = *Lep. ansata*, Johnst.),

Smitt, *l. c.* pp. 14 & 102; *M. hyalina* (Linn.) (= *Cellepora nitida*, Fabr., = *C. vitrina*, Couch, = *Lep. tenuis*, Sars, = *Hippothoa divaricata*, Lmrc., = *H. lanceolata*, Gray, = *H. patagonica*, Busk), Smitt, *l. c.* pp. 16 & 109.

Myriozoum crustaceum (Sm.), Smitt, *l. c.* pp. 18 & 114; *M. subgracile* (D'Orb.), Smitt, *l. c.* pp. 18 & 119; *M. coarctata* (Sars), Smitt, *l. c.* pp. 18 & 119.

Escharidæ (*l. c.* pp. 19–30 & 122–164):—

Lepralia pallasiana (Moll.) (= *Flustra hibernica*, Hass., = *L. pedilostoma*, Hass.), Smitt, *l. c.* pp. 19 & 123; *L. spathulifera*, sp. n., Smitt, *l. c.* pp. 20 & 124, Taf. 26. figs. 94–98, Arctic Seas; *L. hippopus*, sp. n. ?, Smitt, *l. c.* pp. 20 & 127, Taf. 26. figs. 99–105 (? = *L. adpressa*, Busk), Arctic Seas.

Porella acutirostris, sp. n., Smitt, *l. c.* pp. 21 & 132, Taf. 26. figs. 106–108, Greenland; *P. lævis* (Flmng.), Smitt, *l. c.* pp. 21 & 134.

Eschara verrucosa (Esp. ?, Busk), with two varieties, *E. patens* and *E. propinqua*, Smitt, *l. c.* pp. 22 & 142; *E. cervicornis* (Pall.), Smitt, *l. c.* pp. 23 & 149; *E. elegantula* (D'Orb.) (= *E. saccata*, Busk), Smitt, *l. c.* pp. 24 & 154.

Escharoides sarsii (Smitt) (= *E. rosacea*, Sars non Busk), Smitt, *l. c.* pp. 24 & 158; *E. rosacea* (Busk), Smitt, *l. c.* pp. 25 & 161.

Discoporidæ (*l. c.* pp. 25 & 30 & 164–181):—

Discopora scutulata (Busk), Smitt, *l. c.* pp. 25 & 165; *D. coccinea* (Abildg.) (= *Lep. peachii*, Johnst., = *Lep. ventricosa* and *L. ovalis*, Johnst.), Smitt, *l. c.* p. 26; *D. appensa* (Hass.) (= *Lep. ballii*, Johnst., and *L. coccinea*, Johnst.), Smitt, *l. c.* pp. 27 & 175; *D. sincera*, sp. n., Smitt, *l. c.* pp. 28 & 177, Taf. 27. figs. 178–180, Spitzbergen; *D. pavonella* (Ald.) (= *Eschara cribaria*, Busk), Smitt, *l. c.* pp. 28 & 178; *D. skenei* (Sol.) (= *Discopora verrucosa*, Lam., = *Lep. bicornis*, Busk, = *Cellepora palmata*, Fleming, = *Palmicellaria elegans*, Ald. = *Eschara lorea*, Ald.), Smitt, *l. c.* pp. 29 & 179.

Celleporidæ (*l. c.* pp. 30–33 & 181–200):—

Cellepora scabra (Fabr.), Smitt, *l. c.* pp. 30 & 181; *C. ramulosa* (Linn.) (= *C. avicularis* and *C. dichotoma*, Hincks), Smitt, *l. c.* pp. 31 & 189.

Celleporaria hassallii (Johnst.) (= *C. bimucronata*, Hass.), Smitt, *l. c.* pp. 33 & 127; *C. incrassata* (Lam.) (= *C. pumicosa*, Sars, = *C. cervicornis*, Busk, = *C. surcularis*, Pack.), Smitt, *l. c.* pp. 33 & 198.

Reteporidæ (*l. c.* pp. 34–36 & 200–206):—

Retepora cellulosa (Linn.) (= *R. beaniana*, King, = *Lep. lobata*, Busk, = *R. edwardsii*, V. Ben., = *R. notopachys*, Busk), Smitt, *l. c.* pp. 35 & 200.

In addition to the species described by Smitt and referred to above, the following are to be noticed:—

Hemeschara struma, sp. n., Norman, *l. c.* p. 221, pl. 7. figs. 6–8, 100 fathoms, 25 miles north of Island of Unst; *H. sanguinea*, sp. n., Norman, *l. c.* p. 222, pl. 7. figs. 9–11, Fermain Bay, Guernsey, on shells.

Celleporella lepralioides, sp. n., Norman, *l. c.* p. 222, pl. 7. figs. 4, 5, Shetland, on small pebbles from 90 to 100 fathoms.

Menipea jeffreysii, sp. n., Norman, *l. c.* p. 213, pl. 5. figs. 3–5, Shetland. The operculum, which is entire, is figured by a mistake as lobed. *M. smittii*, sp. n., Norman, *l. c.* p. 214, for *Menipea ternata* γ, forma *duplex*, Smitt, Spitzbergen.

Hippothoa expansa, sp. n., Norman, *l. c.* p. 216, pl. 6. figs. 1, 2, 100 fathoms off Unst, Shetland.

Bugula calathus, sp. n., Norman, *l. c.* p. 218, pl. 6. figs. 3–8, Herm, near to *B. flabellata*.

Vincularia margaritacea, sp. n., Pourtales, Bulletin of the Museum of Harvard College, Cambridge, Mass., Nos. 6 & 7, 1867–68, p. 110, off Havana, 270 fathoms.

Farcimia cereus, sp. n., Pourtales, *l. c.* p. 110, off Havana, 270 fathoms.

Cellepora reticulata, sp. n., Pourtales, *l. c.* p. 110, and *C. sigillata*, sp. n., Pourtales, *l. c.* p. 110, off Havana, 270 fathoms.

Cauda (*Cellarina*, V. Ben.) *retiformis*, sp. n., Pourtales, *l. c.* p. 110, and *C. cornigera*, sp. n., Pourtales, *l. c.* p. 111, off Havana, 270 fathoms.

Idmonea flexuosa, sp. n., Pourtales, *l. c.* p. 111, off Havana, 270 fathoms.

Kinetoskias arborescens, g. et sp. n., Danielssen, *l. c.* p. 23, Finmark; *K. smithi*, sp. n., Danielssen, *l. c.* p. 24, Stotholmen.

Halilophus mirabilis is the name given by Sars to a new genus and species of Polyzoon, which, however, is not, as far as we know, described in the zoological literature of 1868 (*vide* Sars, Mém. p. servir à la connaissance des Crinoïdes vivants, p. 48).

Huxleya fragilis, Dyster (1858) (=*Scruparia clavata*, Hincks), Norman, *l. c.* p. 212.

Bicellaria unispinosa, Sars (=*B. alderi*, Busk), Norman, *l. c.* p. 218.

Eschara rosacea, Busk, is added by Norman to the British fauna, specimens having been found at Loch Fyne. *L. c.* p. 220, pl. 6. figs. 10–12.

CRUSTACEA

BY

EDUARD VON MARTENS, M.D., C.M.Z.S.

BATE, C. SPENCE, and WESTWOOD, J. O. A history of British Sessile-eyed Crustacea. London, 8vo.

Parts 20 and 21 contain an account of the *Sphæromidæ* and *Oniscidæ*; parts 22 and 23 (Dec. 1868) complete the work, and contain additions to the *Amphipoda* and a general introduction.

BATE, C. SPENCE. Carcinological Gleanings. No. III. Letter of Dr. R. Cunningham concerning Brazilian Crustacea. Ann. & Mag. Nat. Hist. 1868, i. pp. 442–448, pl. 21. No. IV. On Anomurous Crustaceans; the development of *Pagurus*; some new British Macrura; *Tanais*. Ibid. ii. pp. 112–120, pls. 9–11.

——. On a new genus, with four new species, of Freshwater Prawns. Proc. Zool. Soc. 1868, pp. 363–368, with two plates.

BRADY, G. ST. A monograph of the recent British Ostracoda. Trans. Linn. Soc. xxvi. pp. 353–495, 19 plates.

——. A synopsis of the recent British Ostracoda. Intellectual Observer, xii. pp. 110–130, with two plates.

——. Notes on the Crustacean Fauna of the English Lakes. Ibid. pp. 416–424, with a plate.

——. Contributions to the study of Entomostraca. I. Ostracoda from the Arctic and Scandinavian Seas. Ann. & Mag. Nat. Hist. ii. pp. 30–35, pls. 4 & 5. II. Marine Ostracoda from the Mauritius. Ibid. pp. 178–183, pls. 12–13. III. Marine Ostracoda from Tenedos. Ibid. pp. 220–225, pls. 14–15.

CLAUS, C. Beiträge zur Kenntniss der Ostracoden. I. Entwicklungsgeschichte von *Cypris*. [Contributions to the

knowledge of the Ostracoda. I. The development of *Cypris*.] Schriften der Gesellschaft zur Beförderung der gesammten Naturwissenschaften zu Marburg, 1868, vol. ix. pp. 151–164, 8vo, with two plates.

Claus, C. Beobachtungen über *Lernæocera*, *Peniculus* und *Lernæa*. Published by the same Society, separately, as "Supplement-Heft" ii. in 4to, Marburg, 1868, 32 pages, four plates.

——. Ueber die Gattung *Cynthia* als Geschlechtsform der Mysideen-Gattung *Siriella*. [On the genus *Cynthia* as sexual form of *Siriella*, a genus of Mysidea.] Siebold u. Kölliker's Zeitschr. 1868, xviii. pp. 271–279, pl. 18.

Edward, Th. Stray notes on some of the smaller Crustaceans. Note I. On the Habits &c. of the *Hyperiidæ*. Journ. Linn. Soc. ix. pp. 143–147.

Erber, Victor von. *Helleria*, eine neue Isopoden-Gattung aus der Familie der Onisciden. Verhandl. zool.-bot. Gesellsch. Wien, 1868, xviii. pp. 95–114, pl. 1.

Frauenfeld, Georg von. Zoologische Miscellen, xiv. Verhandl. zool.-bot. Gesellsch. Wien, 1868, xviii. p. 147.

——. Beiträge zur Fauna der Nicobaren. Ibid. pp. 289–300.

Hesse, M. Observations sur des Crustacés rares ou nouveaux des côtes de France.—Quinzième article. Description d'un nouveau Crustacé appartenant au genre *Limnorie*. Ann. Sci. Nat. x. pp. 101–120, pl. 1.—Seizième article. Recherches sur les Cumacés; description de cinq espèces nouvelles. Ibid. x. pp. 347–377, pl. 19.

Hilgendorf, Franz. Ueber eine neue Gattung, *Deckenia*, der kurzschwänzigen Krebse und über Schallapparate der Gattung *Matuta*. [On a new genus (*Deckenia*) of brachyurous Crustacea, and on an apparatus for producing sound in the genus *Matuta*.] Sitzungsberichte d. Gesellsch. naturforschender Freunde zu Berlin, 1868, p. 2.

Jones, T. Rupert. Bivalved Entomostraca, recent and fossil. Transact. Roy. Microscop. Soc. xvi. pp. 39–55.

This paper begins with a general sketch of the whole class of Crustacea; with regard to the Ostracoda, it is based on the recent work of G. S. Brady. It is not capable of being abstracted.

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Sars, M. Bidrag til kundskab om Christiania-Fjordens Fauna, Crustacea. [Contribution to the knowledge of the Fauna of the Christiania Fjord, Crustacea.] Christiania, 1868, gr. 8vo, pp. 104, with seven plates.

Schultze, Max. Untersuchungen über die Gesichtsorgane bei den Crustaceen und Insekten. Bonn, 1868, 4to. [Researches on the organs of sight of Crustacea and Insecta.]

Semper, C. Some remarks on the new genus *Macrobrachium* of Mr. Spence Bate. Proc. Zool. Soc. 1868, p. 585.

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THE GENERAL SUBJECT.

Anatomy and Physiology in General.

The minute structure of the nervous elements in the eyes of the higher Crustacea has been studied and compared with that of Insects by Prof. M. SCHULTZE, and is the subject of a separate work (see above, p. 512). Several species of brachyurous and macrurous Decapods of the Mediterranean have been examined for this purpose. The bacilli of the retina are composed of stratified plates, as in insects and other animals provided with eyes, which is of great importance for the understanding of the theory of sight.

Contributions to Faunas.

The Crustaceans of the *British lakes*, especially of Cumberland and Westmoreland, have been investigated by G. BRADY. *Gammarus* and *Asellus* are scarcely to be found in them; marine forms of Amphipoda, analogous to those in the large lakes of Sweden, have not been found; the Ostracoda are very poorly represented, but some of them are rather rare and fine species, as *Cypris obliqua* (Brady) and *Limnocythere inopinata* (Baird). The Cladocera are more numerous, some of them new or rare, as *Daphnia jardinii* (Baird), *Lynceus barbatus*, sp. n., and *L. sphæricus*, var. *favosa*. Most characteristic is also *L. elongatus* (G. O. Sars). Common from the low lands to the elevated tarns are *L. harpæ* (Baird), *L. sphæricus*, and, of Ostracoda, *Cypris ovum* (Jurine). The poverty of the fauna is very probably due as much or more to the want or scarcity of vegetation in those lakes than to the elevation and temperature. Pools formed by turf-cutters close to the lakes, and filled with water-plants, yielded many more species of *Daphnidæ* and *Lynceidæ*. Intell. Observ. xii. pp. 416–424.

Some Crustacea collected at the Cape-Verde Islands by the British Consul, Mr. MILLER, have been described by ALPH. MILNE-EDWARDS. One of them is common to the Mediterranean, *Actæa rufopunctata* (M.-Edw.), another to the shores of America, *Acanthopus gibbesii* (M.-Edw.). The author states that some other Crustacea are common to both shores of the tropical parts of the Atlantic, not only of marine forms, as *Neptunus diacanthus* (Latr.) and *Leptopodia sagittaria* (Fabr.), but also of the inland species, viz. a species of *Cardisoma*. Nouv. Arch. Mus. Hist. Nat. iv. pp. 49–60.

Eastern Africa. Fifty-seven species of Crustacea collected by A. GRANDIDIER at Zanzibar, and a few from Madagascar, are enumerated by ALPH.

Milne-Edwards. Most of them are Decapods. Those common to the Red Sea and to more remote parts of the eastern seas are pointed out and the new species described. Nouv. Arch. Mus. Hist. Nat. iv. pp. 69–92.

Eastern Asia. The principal freshwater forms of higher Crustaceans are *Thelphusa*, *Palæmon*, and *Atya*. *Gelasimus* and *Sesarma* are found in brackish water; but some species of the latter genus, as well as *Eriochir*, live also in fresh water. Of Amphipods, *Gammarus* and *Orchestia* inhabit moist localities at a great distance from the sea. *Asellus* and *Armadillidium* have not yet been seen in the Indian Archipelago. *Porcellio* and *Ligia* live in most parts of the globe under similar conditions as in Europe. Also a few of *Cymothoadæ* inhabit fresh waters of Eastern Asia. Martens, Wiegm. Arch. xxxiv. pp. 17–61.

Nicobar Islands. Eighty-eight species of Crustacea found on the shores of these islands are enumerated by G. v. Frauenfeld, Verh. zool.-bot. Gesellsch. Wien, xviii. p. 293. They are the same which have been already mentioned in the Crustacea of the 'Novara' expedition, worked out by C. Heller. See Zool. Record, vol. ii.

Australia. The *Astacidæ* of Australia are enumerated by E. v. Martens, Monatsberichte Akad. Wiss. Berlin, 1868, pp. 608–609.

DECAPODA.

BRACHYURA.

Oxyrhyncha.

Pisa brevicornis, Madagascar, and *P. acutifrons*, Zanzibar, spp. nn., Alph. M.-Edw. Nouv. Arch. Mus. iv. pp. 76 & 79, pl. 19. figs. 1–4 & 5–6.

Micropisa violacea, sp. n., Alph. M.-Edw. *l. c.* p. 50, pl. 16. figs. 3–6, St. Vincent, Cape-Verde Islands.

Cyphocarcinus, g. n. Cephalothorax similar to that of *Acanthonyx*, front abruptly bent downwards; orbits small, tubular; eye-stalks short, not retractile; basal article of outer antennæ broad, not covered, united with the suborbital lobe. *C. minutus*, sp. n., Alph. M.-Edw. *l. c.* p. 73, pl. 19. figs. 7–12, Madagascar.

Lambrus pulchellus, sp. n., Alph. M.-Edw. *l. c.* p. 53, pl. 16. figs. 7–9, Cape-Verde Islands.

Cyclometopa.

Xantho occidentalis, sp. n., Alph. M.-Edw. Nouv. Arch. Mus. iv. p. 56, pl. 17. figs. 4–8, Cape-Verde Islands. This new species forms a link between the true *Xantho* and the *Cycloxanthus* from Chile.

Xanthodes eriphioides and *melanodactylus*, spp. nn., Alph. M.-Edw. *l. c.* pp. 58 & 60, pl. 16. figs. 10–14, and pl. 17. figs. 1–3, Cape-Verde Islands.

Actæa margaritaria, sp. n., Alph. M.-Edw. *l. c.* p. 62, pl. 17. figs. 9–12, Cape-Verde Islands.

Eurycarcinus, g. n., having the abdomen like *Pilumnus*, the general shape, the buccal area, and the orbits like *Panopeus*. *E. grandidierii*, sp. n., Alph.

M.-Edw. *l. c.* p. 80, pl. 19. figs. 13-16, Zanzibar. To this genus belongs also *Galene natalensis* (Krauss).

Pilumnopeus (Alph. M.-Edw. Crust. Fossil.) *maculatus*, sp. n., Alph. M.-Edw. *l. c.* p. 82, pl. 19. figs. 17-19, Zanzibar.

Goniosoma millerii, sp. n., Alph. M.-Edw. *l. c.* p. 54, pl. 18. figs. 1-3, Cape-Verde Islands.

Catometopa.

On the geographical distribution of the subgenera of *Thelphusa*, see Martens, Wiegm. Arch. xxxiv. p. 18.

Thelphusa obesa, sp. n., Alph. M.-Edw. *l. c.* p. 86, pl. 20. figs. 1-4, Zanzibar. [Very similar to *Th. depressa*, Krauss.]

Thelphusa borneensis, sp. n., Martens, *l. c.* p. 18, Western Borneo.—*Cancer iberus* (Güldenst.), from Tiflis, belongs to *Thelphusa*, ibid.—*Th.* (*Parathelphusa*) *tridentata* and *sinensis* (M.-Edw.), on their affinities, differences, and variations, Martens, ibid. pp. 19-22.—*Th. philippina*, *transversa*, *jagori*, and *picta*, spp. nn., Martens, Monatsber. Ak. Wiss. Berlin, 1868, pp. 608-611, the second from Cape York, the others from the Philippine Islands.

Deckenia, g. n. Efferent respiratory channels produced to the very edge of the forehead, as in the tribe *Oxystomata*; inner antennæ longitudinally situated; in all other respects resembling *Thelphusa*. *D. imitatrix*, sp. n., from Eastern Africa. Hilgendorf, Sitz. Ber. Gesellsch. naturf. Freunde Berlin, 1868, p. 2.

Cardisoma carnifex (Herbst), Amboina, occurring within the town. Martens, Wiegm. Arch. xxxiv. p. 24.

Uca cunninghami, sp. n., founded by Sp. Bate on a drawing by Dr. Robert Cunningham sent from Rio Janeiro. It does not show the maxillipeds, and therefore the genus cannot be determined with certainty. The species lives in streams and on damp rocks at Rio Janeiro. It is very remarkable that the female has been found carrying between fifty and sixty full-developed *live young ones* under the pleon in the ordinary place of the ova. Ann. & Mag. Nat. Hist. i. pp. 445 & 447, pl. 21. fig. 3. [The Recorder thinks that it is *Trichodactylus quadratus*, Lat.]

Libystes, g. n. Allied to *Carcinoplax* and *Pseudorhombila*. Cephalothorax thick, inflated, with entire edges; basal joint of the outer antennæ not reaching the front; epistome broad, with a somewhat prominent ridge forming the expiratory channel; outer maxillipeds short and broad, their third joint very much dilated on the outer side; last joint of the last pair of legs compressed and ciliated on the edges. *L. nitidus*, sp. n., Alph. M.-Edw. Nouv. Arch. Mus. iv. p. 82, pl. 20. figs. 4-7, Zanzibar.

Macrophthalmus grandidieri, sp. n., Alph. M.-Edw. *l. c.* p. 84, pl. 20. figs. 8-11, Zanzibar.

Sesarma (Say). Some species in fresh water, but most in brackish water, in Eastern Asia. Martens, Wiegm. Arch. xxxiv. p. 22.—*S. oblonga*, sp. n., Martens, Monatsberichte Berl. Akad. Wiss. 1868, p. 64, Samar, Philippines.

Eriochir (Haan) in fresh water of the Indian Archipelago. Martens, ibid.

Oxystoma.

Matuta. On an apparatus for producing sound, see Hilgendorf, Sitzber. ntrf. Freund. Berlin, 1868, p. 2.

ANOMURA.

Pagurus. Several stages of development, the first like zoëa, another more advanced, still symmetrical, except in the larger development of the great chela of the right side, described and figured by Sp. Bate, Ann. & Mag. Nat. Hist. ii. pp. 114–116, pl. 9. figs. 1–3. The genera *Glaucothoë* (M.-Edw.) and *Prophylax* (Latr.) are the immature stages of *Pagurus*.

A list of shells from various parts of the world, inhabited by a species of Hermit-crabs, is given by v. Frauenfeld, Verh. zool.-bot. Gesellsch. Wien, 1868, xviii. pp. 295–298. It confirms the fact that the same species of Hermit-crabs is found in very different shells.

Cœnobita. On their occurrence out of water, Martens, Wiegm. Arch. xxxiv. p. 25.

Porcellana platychéles, in the state of zoëa, described and figured by Sp. Bate, Ann. & Mag. Nat. Hist. ii. p. 114, pl. 9. fig. 4.

Æglea lævis found plentifully in Southern Brazil by Dr. Hensel. Martens, Wiegm. Arch. xxxiv. p. 26.

Galatea monodon. Multitudes of this species form brilliant scarlet-coloured patches in the sea near the Falkland Islands. Rob. Cunningham and Sp. Bate, Ann. & Mag. Nat. Hist. i. pp. 444 & 447, pl. 21. fig. 2.

Galatea bamffia (Penn.)=*Munida rondeletii* (Bell), var. with three nearly equal spines in front, taken off the Dudman, and *G. digitidistans*, sp. n., allied to *squamifera* (Leach), British. Sp. Bate, *l. c.* ii. pp. 112, 113.

MACRURA.

Loricata.

Scyllarus arctus. Several instances of its occurrence in Great Britain mentioned by Sp. Bate, Ann. & Mag. Nat. Hist. ii. p. 116.

Palinurus vulgaris. Sp. Bate figures the larva and compares it with *Phyllosoma.* It is not probable that they are merely different stages of the same animal. Ann. & Mag. Nat. Hist. ii. pp. 116, 117, pl. 10. figs. 1, 2.

Palinurus longipes, sp. n., Alph. M.-Edw. Nouv. Arch. Mus. iv. p. 87, pl. 21, Zanzibar. Belongs to the section of the "Langoustes longicornes"=*Panulirus* (Gray).

Astacina.

The Australian species of *Astacus* are arranged by E. v. Martens (Monatsber. Ak. Wiss. Berl. 1868, pp. 615–619) thus:—

I. Abdominal feet fringed with calcareous pieces: *Astacoides* (Guér.).
  a. Muricate species of large size: *serratus* (Shaw)=*spinifer* (Heller)=*armatus* (Martens); *nobilis* (Dana).
  b. Smooth and of minor size: *plebejus* (Hesse)*.
II. Caudal laminæ semimembranaceous; cephalothorax with longit. keels; subg. *Cherops* (Erichs.): *quinquecarinatus* (Gray); *quadricarinatus*,

* The Recorder has convinced himself that this species does not belong to sect. I., but to sect. II.

sp. n., p. 617, from Cape York; *bicarinatus* (Gray), North and South Australia.

III. Caudal laminæ not membranaceous.

a. Cephalothorax with longitudinal keels: *tasmanicus* (Erichson).

b. Cephalothorax without keels.

aa. Lateral caudal laminæ (two last pereiopods) spinulous: *australiensis* (M.-E.), Sydney.

bb. Lateral caudal laminæ with a longitudinal keel: subg. *Engæus* (Erichs.): *fossor* (Erichs.) and *cunicularius* (Erichs.), Tasmania.

Callianassa tridentata, sp. n., Martens, *l. c.* p. 614, Java.

Axius. There appears to be only one British species, *A. stirynchus*; the differences in the shape of the telson, urged as specific by some authors, originate probably from drying. Norman, Ann. & Mag. Nat. Hist. ii. p. 177.—*A. biserratus*, sp. n., Martens, Monatsber. Akad. Wiss. Berlin, 1868, p. 612, Malacca.—*A. glyptocercus*, sp. n., Martens, ibid. p. 613, Cape York, Australia. Remarks on the origin of this generic name, ibid. p. 614.

Gebiopsis, g. n., allied to *Gebia*, but the hands perfectly didactyle. *G. nitidus*, sp. n., Alph. M.-Edw. Nouv. Arch. Mus. iv. p. 63, pl. 18. figs. 4-7, Cape-Verde Islands.

Carides.

Crangon fasciatus (Risso) and *Cr. sculptus* (Bell) may be the same species, and perhaps depauperated specimens of *Cr. boreas* (Phipps). Sp. Bate, Ann. & Mag. Nat. Hist. ii. p. 118; an observation opposed by Mr. Norman, ibid. p. 178.

Nika (Risso). The mandibles formed on the plan of Crangonidæ. *N. couchii* (Bell) scarcely to be distinguished as a species from *N. edulis* (Risso), Sp. Bate, *l. c.* p. 120, pl. 11. fig. 3.

Atya (Leach). This genus, as well as the allied *Caridina*, appears to be confined to fresh water. The genus *Atyoida* (Randall) cannot be maintained, as its only character, the want of the strong development of the third pair of thoracic feet, is shown in Philippine specimens to be regular in younger individuals of *Atya*; specimens of this genus found in the Moluccas, Java, and the Philippines belong perhaps all to one species, *A. armata* (Alph. M.-Edw.). Martens, Wiegm. Arch. xxxiv. pp. 47–50, pl. 1. fig. 6 (*A. armata*, young).

Ephyra (Roux) and *Atyephyra* (Brito-Capello). The first has a well-developed palp on the mandible, which, however, is not bipartite, a long slender rostrum with a few distant indentations, a branchiostegous spine on the cephalothorax, no hairs on the hands, and a keeled abdomen; it is marine, and contains the two species mentioned by Risso and Roux, and *E. häckeli*, sp. n., from Messina. *Atyephyra* has no palp on the mandible, many teeth on the rostrum, a supra[illegible]ital and antennal spine on the cephalothorax; the hands are beset with ha[illegible] and approach in their structure those of *Atya*, and the abdomen is rounded above. It lives in fresh water. To this genus belong, besides the typical species, *rosiana* (Brito-Capello) from Portugal, also *Ephyra compressa* (Haan) from Japan. *Atyephyra* belongs in all respects to the *Atyidæ*; *Ephyra* has no very near affinities, but resembles in several characters *Pasiphaë*, and may be placed, as has been done by Milne-Edwards, with the *Peneidæ*. Martens, *l. c.* pp. 51–55, pl. 6. fig. 4, *Atyephyra compressa*; fig. 7, *Ephyra häckelii*.

Alpheus edwardsii (Audouin) is British, Sp. Bate, Ann. & Mag. Nat. Hist. ii.

p. 119, pl. 11. fig. 2.—The synonymy of this and some allied species has been cleared up by the Rev. A. M. Norman, ibid. pp. 173–176, viz. :—

Alpheus edwardsii (Aud.) is a species of the Red Sea, described lately under the same name by Heller;

Alpheus megacheles (Hailstone, 1835)=*A. edwardsii* of Milne-Edwards and Bate=*Dienecta rubra* of Westwood=*Cryptophthalmus ruber* of Costa=*A. affinis* (Guise, 1854, White)=*A. platyrhynchus* (Heller, 1862), British and Mediterranean;

Alpheus ruber (Rafinesque, Milne-Edwards, Bell, White), British and Mediterranean;

Alpheus edwardsii of Couch, 1861, is *Typton spongicola.*

Palæmon. The eastern species of the subgenus *Palæmon* (Stimpson) have been examined by Martens, Wiegm. Arch. xxxiv. pp. 27–46. They are found chiefly in fresh water. The shape of the rostrum is the same in every age, that of the arm and hand varies greatly with age, but is very characteristic in its final development of the several species, whereas in young specimens arm and hand offer only faint indications of the future specific characters; in the males the hand is rather more developed than in the females, but the difference is not very great. *P. carcinus* (L.), Singapore, Sumatra, and Borneo; *ornatus* (Oliv.)=*vagus* (Heller), Amboina and the island of Adenare, near Flores; *idæ* (Heller), Singapore, Borneo, and Luzon; *dispar*, sp. n., p. 41, Adenare; *sinensis* (Heller), Shanghai; *asperulus*, sp. n., p. 43, pl. 1. fig. 5, Shanghai; *latimanus*, sp. n., p. 44, Samar, Philippine Islands; *javanicus* (Heller), Borneo; *grandimanus* (Randall), Luzon and Samar.

Palæmon niloticus (Klunzinger, 1866) is the species of the same name established, 1833, by Roux, and *Bithynis longimana* (Phil. Wiegm. Arch. 1860) is=*Palæmon gaudichaudii* (M.-E.). Martens, ibid. pp. 65–67.

Macrobrachium has been established by Sp. Bate as a new genus (Proc. Zool. Soc. 1868, p. 363), but is nothing but a division of *Palæmon*, distinguished by Milne-Edwards and Stimpson. The supposed new species, *M. americanum*, p. 363, pl. 30, is=*P. jamaicensis* (Oliv.) [rather *Pal. brachydactylus*, Wiegm.]. His *M. formosense* (sp. n., p. 364, pl. 31. fig. 1) probably =*P. ornatus* (Oliv.), var.; *M. gangeticum*, p. 365, which is not sufficiently described, may be *Pal. carcinus* (L.) or *Pal. lamarei* (M.-Edw.), both occurring in the Ganges; *M. longidigitum*, p. 365, pl. 31. fig. 2, locality not known, may be new; *M. africanum*, p. 366, pl. 31. fig. 3, is the *Palæmon gaudichaudii* of Milne-Edwards, 1837,=*Bithynis longimana* of Philippi, the Tambo river not being in Africa, but in Peru. The occurrence of species of this genus in fresh water was known to Sloane, 1725. Semper, ibid. pp. 585–587.

Typton (Costa)=*Pontonella* (Heller) *spongiosus*, sp. n., British, Sp. Bate, Ann. & Mag. Nat. Hist. ii. p. 119, pl. 11. fig. 1.—Norman, ibid. p. 176, regards it as identical with *T. spongicola* (Costa), from the Mediterranean.

Hippolyte barleei (Sp. B.) is an accidental variety of *H. cranchii* (Leach). Sp. Bate, ibid. p. 120.

Cumacea.

Cuma. Hesse describes the following new species from the northern coasts of France:—*terginigra*, *punctata*, *rufa*, *fasciata*, and *parva.* The author has found ova in females of these species, which, he says, proves that the Cumacea are developed animals. Ann. Sc. Nat. x. p. 349, pl. 19. figs. 1–19.

STOMAPODA.

Cynthia (Thomps.) is the male sex of the same genus of which *Siriella* (Dana) is the female. They have been found together in the sea near Valparaiso. The general form is nearly the same, but the abdomen is more slender in the female, more robust in the male; the abdominal feet, rudimentary in the female, are well developed and provided with gills in the male; the central and the inner lateral laminæ of the caudal fan (telson and last pair of abdominal feet) are provided with pigment in the male, but not in the female. A similar sexual difference, although not so great, was known in the allied genus *Nematopus* (Sars). The animal described and figured by Dana, pl. 44. fig. 1, as the male of *Siriella* is a female not yet perfectly developed. The terminal joint of the stalk of the antennæ is provided in the male with a hairy prolongation, which is absent in the female, and is analogous to the hairy plate at the same joint in the males of *Mysis* and *Podopsis*. Dana is wrong in employing the presence or absence of this plate as a generic character. The species examined by the author is called *Siriella edwardsii*; but he supposes that *Cynthia thomsonii* (M.-Edw.) may be the adult, and *C. inermis* (Kröyer) a young male of the same species. Another species occurs in the Mediterranean, at Messina, perhaps identical with *S. gracilis* (Dana). Claus, Siebold und Kölliker's Zeitschrift, xviii. pp. 271–279, pl. 18.

Gonodactylus folinii, sp. n., Alph. M.-Edw. Nouv. Arch. Mus. iv. p. 65, pl. 18. figs. 8–11, Cape-Verde Islands.—*G. bleekerii*, sp. n., ibid. p. 65, note, Batavia.

Alima (Leach). Sp. Bate supposes that this genus is the second stage of development of the genus *Squilla*. Ann. & Mag. Nat. Hist. i. p. 446.

TETRADECAPODA.

AMPHIPODA.

Gammaridæ.

Orchestia brevidigitata, sp. n., Sp. Bate and Westwood, Hist. of Brit. Sessile-eyed Crust. vol. ii. p. 497, with two woodcuts, Banff.

Orchestia humicola, sp. n., Japan, in woods, far from the sea. Martens, Wiegm. Arch. xxxiv. p. 56.

Montagua clypeata (Kröyer as *Leucothoë*) and *norvegica* (Lillj.), taken on the coast of Northumberland and Banff, described and their essential characters figured by Sp. Bate and Westwood, *l. c.* p. 499, 500.

Acanthonotus oweni (Sp. Bate) seems to be identical with *Gammarus corniger* (J. C. Fabricius, 1781) and with *Epimeria tricristata* (Costa). Sp. Bate and Westwood, *l. c.* p. 528.

Opis leptochela, sp. n., Sp. Bate and Westwood, *l. c.* p. 501, with woodcut. Shetlands and Isle of Man.—*O. quadrimana*, sp. n., B. & W. p. 503, with woodcut, Banffshire coast.

Ampelisca lævigata (Lillj.), Sp. Bate and Westwood, *l. c.* p. 504, with woodcut, Durham.

Haploops tubicola (Liljeborg), found in deep water off Berwick and Teign-

mouth. Norman, Ann. & Mag. Nat. Hist. ii. p. 411, pl. 21. figs. 1–3.—Also in the Shetlands. Sp. Bate and Westwood, *l. c.* p. 505, with woodcut.

Tessarops, g. n. Eyes four, two large compound, and two nearly simple below the others, at the base of the superior antennæ; superior antennæ with a very slender secondary appendage; dorsal margins of the segments of the pleon toothed. *T. hastata*, sp. n., to be compared with *Tiron acanthurus* (Lilljeb.) and *Syrrhoë bicuspis* (Göes), Aberdeenshire coast. Norman, *l. c.* p. 412, pl. 22. figs. 4–7.

Monoculodes longimanus, sp. n., Sp. Bate and Westwood, *l. c.* p. 507, with woodcut, Banff.

Kroyera brevicarpa, sp. n., Sp. Bate and Westwood, *l. c.* p. 508, with woodcut, Banff.

Lepidepecreum (g. n.) *carinatum*, sp. n., Sp. Bate and Westwood, *l. c.* p. 509, with woodcut, Banff, found by Mr. Edward. The absence of a secondary appendage in the upper antennæ distinguishes this new genus from *Anonyx* (Kröyer); and therefore *A. longicornis* of the first volume of this work must be transferred to the same new genus.

Nicippe tumida (Bruzelius) found in the Sound of Skye. Norman, *l. c.* p. 414, pl. 21. figs. 4–6.—Dredged off the Shetlands by Mr. Jeffreys. Sp. Bate and Westwood, *l. c.* p. 511, with woodcut.

Eriopis elongata (Bruzelius) found in the Sound of Skye. Norman, *l. c.* p. 415, pl. 21. figs. 7–10.

Cheirocratus mantis (Norman), Sp. Bate and Westwood, *l. c.* p. 513, with woodcut, off Holy Island and Aberdeenshire.

Mœra loveni (Bruzelius as *Gammarus*) from the Sound of Skye. Norman, *l. c.* p. 416, pl. 21. figs. 11, 12.—*M. batei*, sp. n., Norman, *l. c.* pl. 22. figs. 1–3, dredged at Guernsey.

Megamœra multidentata (Norman, MS.), sp. n., Sp. Bate and Westwood, *l. c.* p. 515, with woodcut, Guernsey.

Helleria, g. n. Eyes compound; superior antennæ slender, much shorter than inferior, with secondary appendage; fifth and sixth segments of pleon coalesced into one. *H. coalita*, sp. n., Shetland, Moray Firth, and Firth of Clyde, swimming near the surface. Norman, *l. c.* p. 418, pl. 22. fig. 8, pl. 23. figs. 1–6. [The paper is published in the December part, therefore later than *Helleria* of Erber, see below, Isopods.]

Microprotopus maculatus (Norman) found among Laminariæ in the island of Mull. Norman, *l. c.* p. 419, pl. 23. figs. 7–11.

Unciola leucopus (Kröyer)=*planipes* (Norman), Sp. Bate and Westwood, *l. c.* p. 517, with woodcut, off Holy Island.

Corophium longicorne (Fabr.). Its burrowing described by Mr. Robertson. Sp. Bate and Westwood, *l. c.* p. 529.

Hyperiidæ.

Hyperia. *Læstrigonus* (M.-Edw.) is stated to be the male of *Hyperia, L., exulans* (Kröyer) that of *H. galba* (Mont.). Of this species, as well as of *oblivia* (Kröyer), *medusarum* (Fabr.), and of a fourth, not described, but provisionally named *minuta*, males and females have been found together, the males always presenting the characters of *Læstrigonus*. They swim free, but are also found occasionally in a Medusa, which they can and do leave at will. Also other small Crustaceans have been found occasionally in Medusæ, for

example, *Anonyx*, *Dexamine*, *Atylus*, *Eurydice*, and even young specimens of *Portunus marmoreus* (Leach). This is no proof of parasitism. Edward, Journ. Linn. Soc. ix. pp. 143–147.

Hyperia tauriformis and *prehensilis*, spp. nn., Sp. Bate and Westwood, *l. c.* pp. 519, 520, with woodcuts, Banff, found by Mr. Edward.—*H. cyanea* (Sabine as *Talitrus*, M.-Edw. as *Metœcus*) taken on the shores of the Moray Frith (never in a Medusa) by Mr. Edward. Ibid. p. 521.

Themisto crassicornis (Kröyer) British, found by Mr. Edward off the coast of Banff. Sp. Bate and Westwood, *l. c.* p. 552, with woodcut.

Themiste antarctica (Dana) observed in Magellan Straits. R. Cunningham and Sp. Bate, Ann. & Mag. Nat. Hist. i. pp. 444 & 447.

Vibilia borealis, sp. n., Sp. Bate and Westwood, *l. c.* p. 524, with woodcut, taken off the coast of Banff; its swimming described by Mr. Edward: never found in a Medusa.

LÆMODIPODA.

Caprella megacephala, sp. n., Alph. M.-Edw. Nouv. Arch. Mus. iv. p. 89, pl. 20. fig. 12, Madagascar.

Caprella dilatata and *C. robusta* (Dana) are perhaps only different in sex; found at Rio Janeiro among the zoophytes which were attached to the screw of a vessel. Sp. Bate, Ann. & Mag. Nat. Hist. i. pp. 446 & 448.

ISOPODA.

Idoteidæ.

Idotea annulata (Dana), of a brilliant blue, pelagic in the Southern Atlantic, occasionally under *Physalia*. Rob. Cunningham and Sp. Bate, Ann. & Mag. Nat. Hist. i. pp. 443 & 447, pl. 21. fig. 1.

Asellidæ.

Limnoria xylophaga, sp. n., Hesse, Ann. Sci. Nat. x. pp. 101–121, pl. 1, fully described.

Tanais (M.-E.). The branchial appendage on the first pair of gnathopods observed and figured by Sp. Bate, Ann. & Mag. Nat. Hist. ii. p. 120, pl. 11. fig. 5. This supports the assertion of Van Beneden and Fritz Müller that this genus should be placed near the family of *Diastylidæ*.—Species of this genus live in submerged wood, like *Limnoria*, and produce, probably from their mouth, long flat threads, which, by their anterior subcheliform feet, are fixed to parts of the wood, and serve to keep it together. Hesse, Ann. Sci. Nat. x. p. 116.

Oniscidæ.

Sp. Bate and Westwood separate this family as a higher division, with the name *Aëro-spirantia*. All the British species, seventeen in number, are described and figured in woodcuts. Brit. Sess.-eyed Crustac. p. 438.

Ligia baudiniana (M.-E.) observed at Rio Janeiro. Rob. Cunningham and Sp. Bate, Ann. & Mag. Nat. Hist. i. pp. 443, 446.

Ligia oceanica (L.) British, Sp. Bate and Westwood, *l. c.* pp. 442–447.

Philoscia muscorum (Scopoli)=*Zia melanocephala* (Koch) and *Ph. couchii* (Kinahan) British. Sp. Bate and Westwood, *l. c.* pp. 448–453.

Philougria riparia (Koch as *Ilea*, which name is preoccupied in botany)=*celer* (Kinahan), *vivida* (Koch, the young of it *I. nana*, Koch), and *rosea* (Koch) British; the last only found at Plymouth. Sp. Bate and Westwood, *l. c.* pp. 454–461. [The generic name is to be spelt *Philygria*.]

Platyarthrus hoffmannseggii (Brandt)=? *Ilea crassicornis* (Koch), British, found in nests of various species of ants. Sp. Bate and Westwood, *l. c.* pp. 462–465.

Oniscus asellus (L.) = *murarius* (Cuv.) and *O. fossor* (Koch) = *tænola* (Koch) = *muscorum* (of Lereboullet, not Cuvier) British. Sp. Bate and Westwood, *l. c.* pp. 466–472.

Porcellio scaber (Latr.)=*granulatus* (Lam.)=*dubius* and *affinis* (Koch); *P. dilatatus* (Brandt) [this has been cited before as a synonym of the preceding species]; *P. pictus* (Brandt)=*serialis* and *crassinervis* (Koch)=*melanocephalus* (Schnitzler); *P. lævis* (Latr.)=*Cylisticus lævis* (Schnitzl.); *P. armadilloides* (Lereboull.)=*convexus* (De Geer); *P. pruinosus* (Brandt)=*frontalis* (Lereboull.); *P. cingendus* (Kinahan): British; the last, taken near Dublin, is the only one which has not been found hitherto on the Continent. Sp. Bate and Westwood, *l. c.* pp. 473–490.

Armadillo vulgaris (Latr.), including as varieties *variegatus* (Latr.), *opacus* and *willii* (Koch), British. Sp. Bate and Westwood, *l. c.* pp. 491–495. The authors use this generic name for *Armadillidium* (Brandt), but do not mention the genus *Armadillo* as restricted by Brandt and Milne-Edwards.

Helleria, g. n. Allied to *Tylos* (Latr.), but distinguished by the first six segments of the abdomen being united. The internal antennæ seem to be absent altogether, as far as this can be ascertained by the examination of a single specimen, these organs being rudimentary in the rest of the Oniscidæ. Many other particulars about the new genus and *Tylos* are given. Only one species, *Helleria brevicornis*, sp. n., Ajaccio, in Corsica. V. v. Erber, Verhandl. zool.-bot. Gesellsch. Wien, xviii. 1868, pp. 95–114, pl. 1.

Pranizidæ.

Praniza and *Anceus*. Nic. Wagner gives a supplement to Hesse's paper, enumerating the differences of the full-grown male and female, *Anceus*, from the larvæ, *Praniza*, and showing that these differences consist in an extraordinary development of all organs which have any relation to the generation, at the expense of the rest of the body. Bull. Acad. Sci. Pétersb. 1866, pp. 497–592.

Sphæromidæ.

Sphæroma serratum (Fabr.)=*cinerea* (Bosc), *Sph. rugicauda* (Leach), *hookeri* (Leach), *curtum* (Leach) with variety *griffithsii* (Leach), and *prideauxianum* (Leach), all British species, described and figured by Sp. Bate and Westwood, *l. c.* pp. 401–416.

Dynamene rubra (Montagu, MS., Leach), *viridis* (Leach), and *montagui* (Leach) British species. Sp. Bate and Westwood, *l. c.* pp. 417–424.

Cymodocea truncata (Montagu, MS., Leach) and *emarginata* (Leach) British. Sp. Bate and Westwood, *l. c.* pp. 425–429.

Naesa bidentata (Adams) British. Sp. Bate and Westwood, *l. c.* pp. 430–432. This is the original spelling; Milne-Edwards writes *Nesæa*.

Campecopea hirsuta (Montagu) and *cranchii* (Leach) British. Sp. Bate and Westwood, *l. c.* pp. 433–437.

Cymothoidæ.

Schiœdte's paper on the mouth of the sucking Crustacea (see Zool. Record, vol. iii. p. 236) is translated in Ann. & Mag. Nat. Hist. i. pp. 1–25, with pl. 1.

Serolis fabricii (Leach). Plentiful about Sandy Point, in Magellan Straits. It crawls very sluggishly, but paddles rapidly on its back along the surface of shallow pools. Rob. Cunningham, Ann. & Mag. Nat. Hist. i. p. 443.

Ægа spongiophila, sp. n., Semper, Wiegm. Arch. 1867, p. 87; Ann. & Mag. Nat. Hist. ii. 1868, p. 29. Lives in *Eupleclella aspergillum*.

Ægа (*Conilera*) *interrupta*, sp. n., Borneo, in freshwater, on *Notopterus hypselonotus* (Bleeker). The fifth, sixth, and seventh segments of the thorax swollen and weakened. Martens, Wiegm. Arch. xxxiv. p. 58, pl. 1. fig. 3.

Cirolana truncata, sp. n., Norman, Ann. & Mag. Nat. Hist. ii. p. 421, pl. 23. figs. 12, 13, Shetland, 40–60 fathoms, in mud.

Anilocra mediterranea (Leach), British, found on small fish in rock-pools at Herm. Norman, *l. c.* p. 422, pl. 23. figs. 14, 15.

ENTOMOSTRACA.

Cladocera.

P. E. Müller has given, in the two memoirs mentioned above (p. 512), a monograph of the Danish Cladocera. He begins with a list of papers on this order of Crustacea, and with general morphological and physiological remarks on the subject; then he proceeds to a detailed account of the structure of the ovaries and two kinds of eggs of certain species, viz. *Holopedium gibberum* (Zadd.), *Daphnia galeata* (Sars), *Leptodora hyalina* (Lillj.), and of some others. Both papers are illustrated by fine plates, drawn by the author himself; and although written in the Danish language, they are rendered more intelligible for foreign readers by a short Latin recapitulation of the chief results, and by a Latin explanation of the plates.

With regard to the summer- and winter-eggs, the author states that both (although the first are produced without fecundation) are essentially similar in their histological genesis and development, both being formed in the same ovaria, from small vesicles, in a homogeneous mass. The development of the vitellus, the disappearance of the germinative vesicle, and the resorption of the vitelligene cells are the same, and occur in the same order. The first difference is to be observed in the composition of the nutritive part of the yolk, a drop of orange-coloured oil being seen in the vitellus of the summer-eggs of some *Daphniidæ* (not *Polyphemidæ*), but never in their winter-eggs, and the yolk of the winter-eggs is usually larger and darker than that of the summer-eggs. These differences, and others occurring in the Polyphe-

midæ, do not appear to be of essential morphological import. This difference is observed before fecundation; and the author thinks it best to regard both as eggs but as different kinds of eggs destined for a different evolution, and therefore provided with a different stock of nourishment and different protection (egg-shell). The propagation of the Cladocera agrees thus with that of the *Aphidæ* in this respect, that in both families there is a difference between the eggs which are to be fecundated and those which do not require fecundation; but it differs, inasmuch as, in the Cladocera, the same female produces both kinds of eggs, which is not the case in the Aphidæ. Further, the propagation of the Cladocera agrees with that of the Coccidæ and Psychidæ in this respect, that the same female produces both kinds of eggs, but differs, inasmuch as in the Coccidæ and Psychidæ there is no difference in the structure of the eggs themselves, but only in the circumstance that the one kind requires fecundation and the other does not. Therefore the propagation of the Cladocera cannot strictly be called either parthenogenesis or alternation of generations, but it is an intermediate kind, combining essential points of both, and showing that the heterogeneity of the two is not so very great as it has been considered by most authors.

The Danish species of Cladocera are arranged by P. E. Müller in the following manner:—

Fam. I. Daphnidæ. Pedes vibratiles, lamellati, obscure articulati, valvulis obtecti.

Subfam. 1. *Sidinæ*. Pedes utrinque 6, omnes habitus æqualis, foliacei. Coparum ramus alter 2-3-articulatus, alter 2-3- articulatus aut in mare 2-articulatus, in feminis nullus.

a. *Latona, Sida, Daphnella.*

b. *Holopedium.*

Subfam. 2. *Daphninæ*. Pedes utrinque 4-6, habitus inæqualis, ex parte modo foliacei. Coparum ramus alter 3-, alter 4-articulatus.

a. *Daphnia, Simocephalus, Scapholeberis, Ceriodaphnia, Moina.*

b. *Macrothrix, Drepanothrix, Lathonura, Bosmina, Acantholeberis, Ilyocryptus.*

Subfam. 3. *Lynceinæ*. Pedes utrinque 5-6, habitus inæqualis, ex parte modo foliacei. Coparum ramus uterque 2-articulatus.

a. *Eurycercus.*

b. *Camptocercus, Acroperus, Alonopsis, Alona, Phrixura, Pleuroxus, Chydorus, Monospilus.*

Fam. II. Polyphemidæ. Pedes prehensiles, subteretes, manifeste articulati, liberi.

Subfam. 1. *Polypheminæ*. Pedes utrinque 4. Coparum ramus alter 3-, alter 4-articulatus.

Polyphemus, Bythotrephes, Podon, Evadne.

Subfam. 2. *Leptodorinæ*. Pedes utrinque 6. Coparum ramus uterque 4-articulatus.

Leptodora.

Daphniidæ.

Latona setifera, P. E. Müller, *l. c.* p. 97, pl. 6. figs. 22–24, on peaty bottoms of lakes and pools, not common.

Daphnella brachyura (Lievin as *Sida*) = *D. wingii* (Baird) = *Diaphanosoma leuchtenbergianum* (Fischer), *l. c.* pp. 100 & 335; *D. brandtiana* (Fischer as *Diaphanosoma*) = *Sidæa crystallina* (Fischer) = *D. brachyura* of Sars, not Lievin, from Esrom Lake.

Sida crystallina (O. F. Müller), including *S. elongata* (Sars), *l. c.* p. 101, common.

Holopedium gibberum (Zaddach), *l. c.* p. 103, in the middle of lakes, near to the surface, not common.

Daphnia schæfferi (Baird) = *pennata* (Müll.) = *pulex* of Straus and Koch = *magna* of Lillj. and Leydig, P. E. Müller, *l. c.* p. 108, in fresh and brackish water; *D. pulex* = *magna* of Fischer, p. 110, pl. 1. fig. 4; *D. longispina* (O. F. Müll.), p. 112, pl. 1. figs. 1, 2, two varieties differing in the length of the spine, frequent in clear waters; *D. pellucida*, sp. n., p. 116, pl. 1. fig. 5, in the middle of some lakes, near the surface, not common; *D. galeata* (Sars), p. 117, pl. 1. fig. 6, two varieties differing by the shape of the front, Lake Esrom; *D. kahlbergensis* (Schödler), p. 118, pl. 1. figs. 7, 8, from the same locality; *D. cucullata* (Sars) = *Hyalodaphnia berolinensis* (Schödler), p. 120, pl. 1. fig. 23, several inland lakes.

Daphnia jardinii (Baird) described and figured from specimens taken in Rydal Water by G. Brady, who thinks that its claim to specific rank may be reasonably doubted. Intellect. Observ. xii. p. 419, pl. 1. figs. 9, 10.

Simocephalus vetulus (O. F. Müll. ?, Baird) = *Daphnia sima* of the elder authors, P. E. Müller, *l. c.* p. 122, pl. 1. figs. 26, 27, very common; *S. exspinosus* (Koch as *Daphnia*), p. 122, pl. 1. fig. 24, two varieties distinguished by the shape of the head; *S. serrulatus* (Koch as *Daphnia*) = *D. intermedia* (Lievin) = *D. brandtii* (Fischer), p. 123, pl. 1. fig. 25, in peaty waters.

Scapholeberis mucronata (O. F. Müll. as *Daphnia*), a variety with horned front = *Monoculus bispinosus* (De Geer) = *Sc. cornuta* (Schödler), *l. c.* p. 124, common in clear waters.

Ceriodaphnia megops (Sars) = ? *D. ventricosa* (Koch) = ? *D. quadrangula* of Lievin, *l. c.* p. 126, pl. 1. figs. 9, 10; *C. reticulata* (Jurine as *Monoculus*) = *D. quadrangula* of Lilljeborg and Schödler, p. 127, pl. 1. figs. 11, 12; *C. pulchella* (Sars), p. 128, pl. 1. figs. 13, 14; *C. punctata*, sp. n., p. 129, pl. 1. fig. 15, Lake Esrom, rare; *C. quadrangula* (O. F. Müll. as *Daphnia*) = *D. reticulata* of Baird, p. 130, pl. 1. figs. 16–18; *C. laticaudata*, new name for *C. quadrangula* of Sars, p. 130, pl. 1. fig. 19, in pools on muddy ground; *C. rotunda* (Straus as *Daphnia*), p. 131, pl. 1. figs. 20–23, same habitat.

Moina brachiata (Jurine), *l. c.* p. 133, pl. 2. fig. 22, in muddy ponds.

Macrothrix rosea (Jurine), *l. c.* p. 136, pl. 3. figs. 1–4; *M. laticornis* (Jurine) = *D. curvirostris* (Fischer), p. 137, pl. 3. fig. 5.

Drepanothrix dentata (Lovén) = *D. scutigera* (Sars) = *D. hamigera* (Sars), *l. c.* p. 137, pl. 2. fig. 13, in ponds, very rare.—The latter not unfrequent in the upland districts of the north of England and south of Scotland, frequenting lakes and clear water. Brady, Intell. Observ. xii. p. 420.

Lathonura rectirostris (O. F. Müll.) = *D. mystacina* (Fischer) = *L. spinosa* (Schödler), *l. c.* p. 139, in clear waters.

Bosmina longirostris (O. F. Müll.), *l. c.* p. 146, pl. 3. figs. 8, 9; *B. cornuta*

(Jurine) = *Eunicea longirostris* (Koch), p. 147, pl. 2. fig. 12, and pl. 3. fig. 10, both common on the shores of lakes; *B. microps*, sp. n., p. 148, pl. 2. fig. 11, Lake Bagsvaer, among Nymphææ, very rare; *B. maritima*, sp. n., p. 149, pl. 2. figs. 9, 10, in the midst of the Sund; *B. brevirostris*, sp. n., p. 149, Lake Mörke; *B. diaphana*, sp. n., p. 150, pl. 2. figs. 3–8, pl. 3. fig. 11, lakes, near the surface; *B. lilljeborgii* (Sars), p. 152, pl. 2. figs. 1, 2, from the same localities.—*B. longirostris* (Müll.) and *longiseta* (Leydig), in the lake-district of Britain, everywhere, males rare, differing from the females in the anterior antennæ. Brady, Intell. Observ. xii. p. 420.

Acantholeberis curvirostris (O. F. Müll.) = *Acanthocercus rigidus* (Schödler), P. E. Müller, *l. c.* p. 153, pl. 3. fig. 7, in pools among Confervæ.

Ilyocryptus (Sars) *rigidus* (Lievin as *Acanthocercus*), P. E. Müller, *l. c.* p. 154, pl. 2. figs. 14–18, pl. 3. fig. 6, crawling on the mud of ponds.—*I. sordidus* (Lievin), British localities. Brady, Intell. Observ. xii. p. 420.

(*Lynceinæ.*)

Lynceus. The jaws are provided with conical elevations, serving as masticating organs; œsophagus, stomach, small and large intestines can be distinguished; the first pair of legs serves for swimming, the second and third for producing a current in the water to assist in respiration; two sacciform testicles and two vasa deferentia are lodged in a pouch of the penultimate caudal segment, and open at the base of the caudal lamina; the females have well-developed ephippia, as in *Daphnia*, but composed of two different capsulæ. The pigmental mass constituting the eye is originally simple in the embryo, and is afterwards divided into two. Plateau, Comptes Rendus de l'Acad, Nov. 1868, Revue et Mag. Zool. 1868, p. 463.

Eurycercus lamellatus (O. F. Müll.) = *L. laticaudatus* (Fischer), P. E. Müller, *l. c.* p. 162, in clear waters, common.

Camptocercus macrurus (O. Fr. Müll.), P. E. Müller, *l. c.* p. 164, pl. 3. fig. 12; *C. rectirostris* (Schödl.) = *L. macrourus* of Fischer, p. 165, pl. 2. fig. 19, pl. 3. fig. 13; *C. lilljeborgii* (Schödl.) = *L. macrourus*, var., of Lilljeborg, p. 166, pl. 3. fig. 14, all in clear waters.—*L. harpæ* (Baird) common in the British lakes, but *L. macrourus* (Müll.) rather a lowland species. Brady, Intell. Observ. xii. pp. 420, 421.

Acroperus leucocephalus (Koch ?, Fischer) = ? *Monoculus striatus* (Jurine) = ? *A. harpæ* (Baird), P. E. Müller, *l. c.* p. 167, pl. 3. figs. 15–17, pl. 4. fig. 26; *A. angustatus* (Sars), p. 169, pl. 3. fig. 18, pl. 4. fig. 27; *A. cavirostris*, sp. n., p. 169, pl. 2. fig. 21, pl. 3. fig. 19, in the Lake Huul-sö, one specimen only found.

Alonopsis elongata (Sars as *Alona*) = *Lynceus macrourus* of Lievin ?, Zenker and Leydig, = *Acroperus intermedius* (Schödler), in clear waters. P. E. Müller, *l. c.* p. 171.—*Lynceus elongatus* (G. O. Sars), most characteristic of the British mountain-lakes, often 2–3 pairs of valves superimposed. Brady, Intell. Observ. xii. p. 421, pl. 1. fig. 8.

Alona acanthocercoides (Fischer as *Lynceus*), P. E. Müller, *l. c.* p. 174, pl. 4. fig. 5, in muddy ponds, near the bottom; *A. leydigii* (Schödler) = *Lynceus quadrangularis* of Leydig, p. 174; *A. oblonga*, sp. n. ?, p. 175, pl. 3. figs. 22, 23, pl. 4. figs. 4, 5, = ? *Lynceus quadrangularis* of Lievin and Lilljeborg, common; *A. quadrangularis* (O. F. Müll. as *Lynceus*) = *A. sulcata* (Schödler), p. 176, pl. 3. figs. 20, 21, common; *A. sanguinea*, sp. n., p. 177, Lake Esrom; *A. lineata*

(Fischer as *Lynceus*), p. 178, pl. 4. figs. 3, 4, in lakes and ditches, common; *A. tenuicaudis* (Sars)=? *A. camptocercoides* (Schödl.), p. 179, pl. 2. fig. 20, pl. 3. fig. 24, in ponds and ditches; *A. dentata*, sp. n., p. 179, pl. 4. figs. 6, 7, Lake Dallerup, only one specimen found; *A. reticulata* (Baird)=*esocirostris* (Schödl.)=gen. *Graptoleberis* (Sars), p. 180; *A. guttata* (Sars), pp. 181 & 356, pl. 4. figs. 7, 8,=? *reticulata* (Schödl.), Lake Huul-sö, one specimen only found; *A. intermedia* (Sars), p. 355, pl. 4. fig. 9; *A. transversa* (Schödler as *Pleuroxus*) =*pygmæa* (Sars), p. 181, pl. 4. figs. 10, 11; *A. rostrata* (Koch as *Lynceus*)= gen. *Alonella* (Sars), p. 182, pl. 4. fig. 12; *A. falcata* (Sars)=gen. *Harporhynchus* (Sars), p. 183, pl. 4. figs. 13, 14, in a little spring near the seaside.— British localities of *L. quadrangularis, guttatus*, and others given by Brady, Intell. Observ. xii. pp. 421, 422.

Phrixura, g. n. Caput immobile, impressione nulla a thorace disjunctum, testa lata non carinata obtectum. Oculus adest. Testa corporis lata, oblonga; longitudo marginum caudalium altitudine maxima animalis paulo minor. Cauda mediocris, teres, apice obtuso, dentibus sparsim obsita, unguibus minimis, dentes magnitudine vix superantibus. Mas ignotus. *P. rectirostris*, sp. n., P. E. Müller, *l. c.* p. 184, pl. 4. fig. 15, locality unknown.

Pleuroxus exiguus (Lillj. as *Lynceus*) = *L. aculeatus* (Fischer), P. E. Müller, p. 187, pl. 4. figs. 16, 17; *P. truncatus* (O. F. Müll. as *Lynceus*)=? *Peracantha brevirostris* (Schödl.), p. 188, common; *P. aduncus* (Jurine as *Monoc.*), p. 189, in ponds; *P. trigonellus* (O. F. M.), p. 189; *P. personatus* (Leydig)=? *Rhyacophilus glaber* (Schödl.), p. 191, pl. 3. fig. 28, pl. 4. figs. 21–23; *P. hastatus* (Sars)=*lævis* (Sars), p. 193.—Brady enumerates the localities for British species, Intell. Observ. xii. p. 422.

Chydorus sphæricus (O. F. M.), P. E. Müller, *l. c.* p. 194, pl. 4. fig. 24.— Brady (*l. c.*) describes a variety, *favosa*, p. 423, figs. 3–5.—*L. barbatus*, sp. n., Brady, *l. c.* p. 422, pl. 1. figs. 1–2, Ennerdale.

Monospilus dispar (Sars)=*L. tenuirostris* (Fisch.), P. E. Müller, p. 196, very rare in mud.

Polyphemidæ.

Polyphemus pediculus (De Geer as *Monoculus*)=*oculus* (O. Fr. Müll.)= *stagnorum* (Fischer)=*pediculus, kochii*, and *oculus* of Schödler, P. E. Müller, *l. c.* p. 200, pl. 5. figs. 19–21.—The same in Derwentwater, Brady, Intell. Observ. xii. p. 420.

Bythotrephes cederströmii (Schödl.)=*longimanus* of Lilljeborg, P. E. Müller, *l. c.* pp. 203–214, pl. 4. fig. 29, pl. 5. figs. 1–18, pl. 6. fig. 7, found in one lake only, Esrom, but there always common.

Podon intermedius (Lilljeborg) = *Evadne polyphemoides* of Claus, P. E. Müller, *l. c.* pp. 215–220, pl. 5. fig. 22, pl. 6. figs. 1–4, in the Sund, near the surface; *P. polyphemoides* (Leuckart as *Evadne*)=*Pleopis leuckartii* (Sars), p. 220, pl. 6. figs. 5, 6, with the preceding.

Evadne nordmanni (Lovén), P. E. Müller, *l. c.* p. 222, pl. 6. figs. 8–10, common in the Sund; *E. spinifera*, sp. n.,=*E. nordmanni* of Lilljeborg, p. 225, pl. 6. figs. 11–13, with the former, but not common.

Leptodora hyalina (Lilljeborg), P. E. Müller, *l. c.* p. 226, pl. 6. figs. 14–21, in lakes near the surface, common.

OSTRACODA.

Prof. Claus has made researches into the development of *Cypris ovum, fasciata,* and *vidua* (see above, p. 510). The Ostracodes undergo a metamorphosis during their free life; and nine stages can be distinguished, each being marked by a moulting of the chitine integuments. In the *first* the larva is a *Nauplius* with two pairs of antennæ and three pairs of other members, the third being still a leg, and not a mandible. In the *second* this leg is transformed into a mandibular palpus, the mandibles have their final form, and elements of the maxillæ and of the first pair of perfect legs make their appearance. In the *fourth* stage, which appears to correspond to the state of development of *Cythere* when leaving the egg, the maxillipeds make their first appearance (therefore later than the following pair of members, viz. the first pair of legs); they serve in the *fifth* stage as legs (as they do permanently in *Cythere*) and are then provided with a strong curved bristle at their extremity; such a bristle is present in all stages of the metamorphosis, but in different members,—first in that which afterwards becomes the mandible, later in the first leg, then in the maxilliped, lastly, and permanently for the whole life, in the same first leg which had lost it n the fifth stage—during which it has been transformed from a simple short piece to a slender member with several joints. The posterior leg makes its appearance in the *sixth* stage. In the *seventh* all members have their final shape, and the elements of the sexual organs make their first appearance; their further development, and the differentiation between the sexes, belong to the *eighth*; the development of sexual orifices and the receptaculum seminis to the *ninth* and last.

G. St. Brady has published, in the Transactions of the Linnean Society, vol. xxvi. 2nd part, a very elaborate Monograph of the British *Ostracoda,* in which he describes the genera and about 140 species, figuring all, except some which he could not recognize himself and one or two which he received too late. The localities are carefully noted, and a geographical table at the end of the monograph is added.

The families are arranged in the following manner :—

Sectio Podocopa: Fam. 1. *Cypridæ*; 2. *Cytheridæ.*
Sectio Myodocopa: Fam. 3. *Cypridinidæ*; 4. *Entomoconchidæ* (no British species); 5. *Conchœciadæ.*
Sectio Cladocopa: Fam. 6. *Polycopidæ.*
Sectio Platycopa: Fam. 7. *Cytherellidæ.*

The majority of *Cypridæ,* but not all, are inhabitants of fresh water, that of *Cytheridæ* and the few species of all the other families are marine. *Cytheridea torosa* (Jones), *Cythere pellucida* (Baird), and *Loxoconcha elliptica* (Brady) are plentiful in salt marshes, in company with several Foraminifera.

An able abstract of this monograph in a more popular style, explaining fully the general structure and habits of the Order, giving the distinctive characters of the families and genera, and mentioning all the species, with numerous interesting remarks, and illustrated by several good figures, is given by the author in the 'Intellectual Observer,' vol. xii. pp. 110–130, with two plates.

Cypridæ.

Cypris. On sexual peculiarities and differences of age, see Plateau, in Compt. Rend. 1868, Nov., or Rev. et Mag. Zool. 1868, p. 464.

Cypris (Müll.). British species: *fusca* (Straus) = *oblonga* (Brady), Brady, Trans. Linn. Soc. xxvi. p. 362, pl. 23. figs. 10–15; *incongruens* (Ramdohr) = *aurantia* (Baird), p. 362, pl. 23. figs. 16–22; *virens* (Jurine), p. 364, pl. 23. figs. 23–32, and pl. 36. fig. 1; *obliqua*, sp. n., p. 364, pl. 23. figs. 33–38, Westmoreland; *punctillata* (Norman) = *cuneata* (Baird), p. 365, pl. 26. figs. 1–7; *bispinosa* (Lucas), only at Guernsey, p. 366, pl. 26. figs. 11–17; *tessellata* (Fischer) = *affinis* (Lillj.), p. 366, pl. 23. figs. 39–45; *salina* (Brady) = *strigata* (Baird, not Müller), p. 368, pl. 26. figs. 18–23; *reptans* (Baird) = *Candona virescens* (Brady), p. 370, pl. 25. figs. 10–14, and pl. 36. fig. 4; *serrata* (Norman as *Candona*), p. 376, pl. 25. figs. 15–19, and pl. 36. fig. 3; *compressa* (Baird) = *Cypria punctata* (Zenker), p. 372, pl. 34. figs. 1–5, and pl. 36. fig. 4; *striolata* (Brady), p. 372, pl. 24. figs. 6–10; *ovum* (Jurine) = *minuta* (Baird), p. 373, pl. 24. figs. 31–34; *lævis* (Müll.) = *ovum* (Zenker, Jones), p. 374, pl. 24. figs. 21–30, and pl. 36. fig. 5; *cinerea*, sp. n., Brady, p. 374, pl. 24. figs. 29–42, and pl. 36. fig. 7, Yorkshire.

The four following, *elliptica*, *gibbosa*, *clavata*, and *joanna*, named by Baird, have not been found or recognized by Brady.

Cypridopsis, g. n., Brady, Intell. Obs. *l. c.* pl. 1. fig. 3. The following species are referred to this genus:—*C. vidua* (Müll.) = *sella* (Baird), *C. aculeata* (Lillj.), *C. villosa* (Jurine) = *westwoodii* (Baird).

Pontocypris angusta, sp. n., Brady, Trans. Linn. Soc. xxvi. p. 387, pl. 34. figs. 43, 44, from Birterbuy Bay.

Pontocypris attenuata and *davisonii*, spp. nn., Brady, Ann. & Mag. Nat. Hist. ii. p. 179, pl. 4. figs. 11–14, pl. 13. figs. 9–10, from Mauritius.—*P. intermedia*, sp. n., Brady, *l. c.* p. 220, pl. 14. figs. 1–2, sea near Tenedos.

Bairdia acanthigera, sp. n., Brady, Trans. Linn. Soc. xxvi. p. 390, pl. 27. figs. 18–21, South of England.—*B. fulva*, sp. n., Brady, *l. c.* p. 474, pl. 28. fig. 21, from Roundstone and Shetland.

Bairdia formosa, sp. n., Brady, Ann. & Mag. Nat. Hist. ii. p. 221, pl. 14. figs. 5–7, sea near Tenedos.

Macrocypris, g. n. Antennæ short and robust, lower five-jointed, armed with long apical claws. First pair of jaws having an unusually small branchial plate, second pair destitute of any branchial appendage. Palp dissimilar in male and female. First pair of feet pediform, strongly clawed, second entirely covered by the shell, and different in structure. Shell elongated, smooth; right valve larger and overlapping on the dorsal margin. Only one species known, *M. minna* (Baird as *Cythere*), rare, found off the coast of Shetland, more common in the Norwegian seas. Brady, Trans. Linn. Soc. xxxi. p. 391, pl. 27. figs. 5–8, & pl. 38. fig. 4 (Intell. Observ. p. 119).

Cytheridæ.

Cythere (Müll.). Brady (Trans. Linn. Soc. xxvi.) reunites with this genus *Cythereis* (G. O. Sars), some British species being intermediate between both. British: *lutea* (Müll.) = *reniformis* (Baird) = *setosa* (Brady), *l. c.* p. 395, pl. 28. figs. 47–56, & pl. 39. fig. 2; *viridis* (Müll.), p. 397, pl. 28. figs. 40–41, 57, 59, & pl. 38. fig. 8; *pellucida* (Baird), p. 397, pl. 28. figs. 22–26 & 28; *castanea* (G. O. Sars), p. 398, pl. 28. fig. 27, & pl. 38. fig. 6; *tenera*, sp. n., p. 399, pl. 28. figs. 29–32, Durham, Shetland, &c.; *badia* (Norman), p. 399, pl. 29. figs. 56–58; *oblonga* (Brady), p. 400, pl. 31. figs. 14–17; *rubida*, sp. n., p. 400, pl. 32. figs. 71–74, Arran; *convexa* (Baird) = *punctata* (Jones), p. 401, pl. 29. figs. 19–27, & pl. 39. fig. 4, this species exhibits a remarkable approach to the genus *Bairdia* in general outline, but is a true *Cythere* in all essential points (Intellect. Observ. xii. p. 121); *pulchella*, sp. n., Brady, p. 404, Loch Eribol; *cuneiformis*, new name for *ventricosa* (G. O. Sars), which is preoccupied, p. 404, pl. 31. figs. 47–54; *limicola* (Norman) = *nodosa* (G. O. Sars) = *areolata* (Brady), *l. c.* p. 405, pl. 31. figs. 38–41; *globulifera*, sp. n., p. 406, pl. 31. fig. 42, Roundstone; *tuberculata* (G. O. Sars) = *mutabilis* (Brady), p. 406, pl. 30. figs. 25–41; *concinna* (Jones) = *clavata* (G. O. Sars), p. 408, pl. 26. figs. 28–33, & pl. 38. fig. 7; *angulata* (G. O. Sars), p. 409, pl. 26. figs. 39–42; *dubia*, sp. n., p. 409, pl. 32. figs. 75–76, Shetland; *finmarchica* (G. O. Sars), p. 410, pl. 31. figs. 9–13; *villosa* (G. O. Sars), p. 411, pl. 29. figs. 28–32; *semipunctata*, sp. n., p. 411, pl. 29. figs. 33–37, Birterbuy Bay and Roundstone; *jeffreysii*, sp. n., p. 412, pl. 29. figs. 51–55, Channel Islands; *marginata* (Norman), p. 413, pl. 31. figs. 5–8; *quadridentata* (Baird), p. 416, pl. 30. figs. 21–24; *emaciata* (Brady), p. 414, pl. 31. figs. 31–37; *mirabilis*, sp. n., p. 415, pl. 39. figs. 7–8, Lewis; *mucronata* (G. O. Sars) = *spinosissima* (Brady), p. 415, pl. 26. fig. 34; *dunelmensis* (Norman), p. 416, pl. 30. figs. 1–12; *whiteii* (Baird), p. 416, pl. 30. figs. 21–24; *antiquata* (Baird), p. 417, pl. 30. figs. 17–20; *jonesii* (Baird) = *spectabilis* (Sars) = *subcoronata* (Brady), p. 418, pl. 30. figs. 13–16, a somewhat different variety of this species = *ceratoptera* (Bosquet) = *subcoronata* (Speyer), in the Mediterranean and on the western coast of England, *l. c.* p. 476; *emarginata* (G. O. Sars), p. 475, Shetland; ? *acerosa*, sp. n., p. 409, pl. 31. figs. 55-58.

Cythere borealis, sp. n., Brady, Ann. & Mag. Nat. Hist. ii. p. 31, pl. 4. figs. 1–4, 6–7, Scandinavian Sea, lat. 67° 17 N'., long. 62° 21' W., six feet below low-water mark; *C. pulchella* (Brady), ibid. figs. 18–20, same locality; *C. robertsoni*, sp. n., Brady, ibid. p. 33, pl. 4. figs. 5, 8–10, Dröbak in Christianiafjord, 30–35 fathoms.—*C. demissa*, *plana*, *fumata*, *hamigera*, *bispinosa*, spp. nn., Brady, ibid. pp. 180–182, pls. 12 & 13; *C. darwinii* (Brady), var., ibid. p. 181, pl. 12. figs. 11, 12; all from the sea near Mauritius.—*C. crispata*, *favoides*, *speyeri*, and *dissimilis*, spp. nn., Brady, pp. 221, 222, pl. 14. figs. 14–15, & pl. 15. figs. 5–13, sea near Tenedos.

Limnocythere, g. n. Like *Cythere*, but the upper antennæ armed with short setæ instead of spines, and living in fresh water. Two British species, very minute, living on clayey bottoms or amongst mud, *L. inopinata* (Baird as *Cythere*) and *monstrifica* (Norman as *Cypris*), Brady, Trans. Linn. Soc. xxvi. pp. 419–421, pl. 39. figs. 15–18 & 9–12, pl. 38. fig. 9, & pl. 39. fig. 1 (Intellect. Observ. xii. p. 121, pl. 1. fig. 7).

Cytheridea (Bosquet). Brady includes in this genus also *Cyprideis* (Jones); the majority of the species are marine. British: *elongata* (Brady)

=*angustata* (Brady), *l. c.* p. 421, pl. 28. figs. 13–16, & pl. 40. fig. 6; *papillosa* (Bosquet) = *bradii* and *debilis* (Norman as *Cythere*) = *bairdii* (G. O. Sars), p. 423, pl. 28. figs. 1–6, & pl. 40. fig. 1; *punctillata* (Brady)=*proxima* (G. O. Sars), p. 424, pl. 26. figs. 35–38, & pl. 28. figs. 17–20; *torosa* (Jones), plentiful in brackish water, in one or two instances found in fresh water, p. 425, pl. 28. figs. 7–12, & pl. 39. fig. 5; *lacustris* (G. O. Sars), in Great Britain very rare, found in the North Shaws Loch, Selkirkshire, and the Glasgow and Paisley Canal, *l. c.* p. 427, pl. 26. figs. 18–21, & pl. 40. fig. 2; *sorbyana* (Jones) =*dentata* and *inermis* (G. O. Sars), *l. c.* p. 428, pl. 29. figs. 1–6; *zetlandica*, sp. n., p. 428, pl. 28. figs. 42–46, Shetland; ? *subflavescens* (Brady), *l. c.* p. 429, pl. 34. figs. 53–55.

Cytheridea spinulosa, sp. n., Brady, Ann. & Mag. Nat. Hist. ii. p. 182, pl. 13. figs. 1–6, sea near Mauritius, together with *C. punctillata* (Brady), which is also described.

Eucythere (Brady) = *Cytheropsis* (Sars), which is preoccupied. *Eu. anglica*, sp. n., Brady, Trans. Linn. Soc. xxvi. p. 475, pl. 25. figs. 49, 50, from Durham.

Loxoconcha (G. O. Sars) = *Normania* (Brady). *L. elliptica*, sp. n., Brady, *l. c.* p. 435, pl. 27, & pl. 40. fig. 3, from Guernsey, Northumberland, &c., in brackish water. There are four other British species of this genus.

Loxoconcha lilljeborgii, sp. n., Brady, Ann. & Mag. Nat. Hist. ii. p. 183, pl. 13. figs. 11–13, sea near Mauritius; *L. alata*, sp. n., Brady, *l. c.* p. 223, pl. 14. figs. 8–13, sea near Tenedos.

Cytherura (G. O. Sars). We mention here only the new species described by Brady (Linn. Trans.): *angulata*, p. 440, pl. 32. figs. 22–25, Plymouth, Arran, &c.; *lineata*, p. 441, pl. 32. figs. 30–34, 67, Skye; *cuneata*, p. 442, pl. 32. figs. 35–38, 63, Skye, &c.; *sarsii*, p. 442, pl. 32. figs. 39–42, Stranraer; *producta*, p. 443, pl. 32. figs. 60, 61, Birterbuy Bay; *robertsoni*, p. 444, pl. 32. figs. 16–18, Arran; *cornuta*, p. 445, pl. 32. figs. 12–15, Birterbuy Bay &c. Exotic are:—*rudis*, sp. n., Brady, Ann. & Mag. Nat. Hist. ii. p. 34, pl. 5. figs. 15–17, Davis Straits; *acris*, sp. n., Brady, ibid. p. 224, pl. 15. figs. 3, 4, Mediterranean Sea near Tenedos.

Cytheropteron (G. O. Sars). Valves very tumid, their lateral alæ strongly projecting. British: *subcircinatum* (G. O. Sars), Brady, Trans. Linn. Soc. xxvi. p. 447, pl. 34. figs. 39–42; *latissimum* (Norman)=*convexum* (Sars), p. 448, pl. 34. figs. 26–30; *nodosum*, sp. n., p. 448, pl. 34. figs. 31–34, Hebrides; *punctatum*, sp. n., p. 449, pl. 34. figs. 45–48, Minch; *multiforum* (Norman), p. 449, pl. 29. figs. 38–42; *rectum*, sp. n., *l. c.* p. 476, Shetland.—Exotic: *vespertilio* (Reuss), *montrosiense* (C. B. R.), and *inflatum* (C. B. R.), known hitherto as fossil only, found recent in the Arctic Sea, Brady, Ann. & Mag. Nat. Hist. ii. p. 33, pl. 5. figs. 1–10; *pyramidale*, sp. n., Brady, ibid. p. 34, pl. 5. figs. 11–14, Dröbak, in Norway, 25–30 fathoms.

Sclerochilus (?) *ægæus*, sp. n., Brady, Ann. & Mag. Nat. Hist. ii. p. 224, pl. 14. figs. 3–4, sea at Tenedos.

Paradoxostoma (Fisch.). Brady (Linn. Trans.) describes the following new British species:—*normani*, p. 458, pl. 35. figs. 39, 40, Skye and Plymouth; *hibernicum*, p. 460, pl. 35. figs. 35, 36, Arran; *parniense*, p. 460, pl. 35. figs. 26–29, pl. 40. fig. 9, Guernsey; *ensiforme*, p. 460, figs. 8–11, all over Great Britain; *flexuosum*, p. 461, figs. 30–34, generally distributed; ? *arenatum*, p. 461, figs. 37–38, Birterbuy Bay.

Paradoxostoma ? *reniforme*, sp. n., Brady, Ann. & Mag. Nat. Hist. ii. p. 224, pl. 15. figs. 1–2, sea at Tenedos.

Cypridinidæ.

Philomedes (Lillj.) *interpuncta* (Baird) = *longicornis* (Lillj.), the most abundant of the British species of this family, on the surface of the sea, and occasionally in tidal pools, from Guernsey to Shetland, swims with long jerks. Brady, Trans. Linn. Soc. xxvi. p. 463, pl. 33. figs. 10–13, & pl. 41. fig. 3.

Cylindroleberis, g. n. Upper antennæ of the male bearing at the apex two excessively long annulated setæ, four shorter setæ, and a short curved claw; the same of the female terminated by a stout curved claw and 6–7 subequal plumose setæ; secondary branch of the lower antennæ in the male robust, subchelate, terminal joint slender, in the female simple, triarticulate, last joint setiform, first maxilla consisting of a broad lamina densely clothed on its distal side with long bristles. Oviferous feet terminating in two equal dentate lips, and bearing about six pairs of spinous setæ. Shell elongated, smooth, beak rounded, notch narrow. Swims freely. British: *mariæ* (Baird), Brady, *l. c.* p. 465, pl. 33. figs 18–22, & pl. 41. fig. 1, and *teres* (Norman), *l. c.* p. 465, pl. 33. figs. 6–9, & pl. 41. fig. 2, both taken in the Firth of Clyde during the night.

Bradycinetes (G. O. Sars) *brenda* (Baird) = *globosa* (Lillj.), Brady, *l. c.* p. 466, pl. 33. figs. 1–5, & pl. 41. fig. 5; *macandrei* (Baird), *l. c.* p. 468, pl. 33. figs. 14–17, & pl. 41. fig. 4.

Conchœciidæ.

Conchœcia obtusata (G. O. Sars). One specimen only, probably of this species, is known as British; it was found by the Rev. A. M. Norman in sand dredged off Shetland. Brady, *l. c.* p. 470, pl. 41. fig. 9.

Polycopidæ.

Polycope orbicularis (G. O. Sars), only $\frac{1}{8\overline{5}}$ of an inch in size, spherical, often beautifully punctate and marked out into polygonal areolæ, has occurred in Connemara, Shetland, and the west of Scotland. Brady, *l. c.* p. 471, pl. 35. figs. 53–57. *P. dentata*, sp. n., only one specimen found by Mr. Norman, with *Conchœcia*. Brady, *l. c.* p. 472, pl. 35. figs. 58, 59.

Cytherellidæ.

Cytherella (Bosquet) *scotica*, sp. n., and *lævis*, sp. n., both very rare, hitherto only found amongst the Hebrides, the former closely allied to the Norwegian *C. abyssorum* (G. O. Sars). Several fossil species known. Brady, *l. c.* p. 473, pl. 34. figs. 18–21, & 15–17.

COPEPODA.

Arpacticus krohnii, *chelifer*, and *Cetochilus arcticus* are stated to occur chiefly in parts of the Arctic Sea abounding in Diatomaceæ, from which they derive a dark hue. Brown, Journal of Botany, March 1868, and Quarterly Journal of Microscopical Science, viii. 1868, p. 244.

Thaumatoessa armoricana, sp. n., Hesse, Ann. Sc. Nat. x. p. 362, pl. 19. figs. 20–34.

Ismaila monstrosa. R. Bergh's paper on this parasitical crustacean (see

Zool. Record, vol. iv. pp. 611 & 620) is translated in Ann. & Mag. Nat. Hist. ii. pp. 133–138, pl. 1. figs. 18–22.

SIPHONOSTOMA.

Lernæa branchialis. Its metamorphosis has been described by C. Claus, partly from observations on living animals made by Dr. Metzger. The young live on the gills of *Pleuronectes flesus*, and are free in their first stage, with two pairs of antennæ, the second pair being prehensile, two pairs of feet, and a caudal furca fringed with bristles (pl. 4. fig. 4); soon they attach themselves by a frontal process, the bristles of the furca are lost, but the number of feet increases in subsequent moultings to four pairs. In this state they grow considerably, and the testicles or ovaria make their appearance (pl. 4. figs. 6, 9, 11, & 13). Then follows a second period of free life, in which the bristles of the furca reappear, and the two sexes approach each other. In this state the female is distinguished by a much longer tail from the male, but otherwise the size and shape of both is not very different; the antennæ are still the same as in the former stages (pl. 3. figs. 3, 4, & 5). Finally the female fixes itself on the gills of the Codfish, loses the antennæ, feet, and caudal furca, whilst the three frontal horns are developed. It coils its body up in the well-known manner, develops eggs, and becomes the worm-like creature known as *Lernæa branchialis* (pl. 3. figs. 6–7). Nearly the same observations are contained in the paper by A. Metzger, Wiegm. Arch. 1868, pp. 106–110.

Lernæocera esocina (Herm.), from the gills of the pike; the different stages are described and figured by Claus (ibid.), pl. 1 & pl. 2. figs. 1, 2, 8. The young has the same two pairs of antennæ, three pairs of feet, and a caudal furca, of which each branch is provided with one long and several short bristles; but the two pairs of horns or arms which persist in the adult animal are already present, only proportionally smaller, in the young.

CIRRIPEDIA.

Balanidæ.

Fritz Mueller's interesting paper on *Balanus armatus*, sp. n., and on a hybrid between this species and *B. improvisus*, var. *assimilis* (Dana) (see Zool. Record, vol. iv. pp. 621, 622) is translated in Ann. & Mag. Nat. Hist. i. pp. 392–412, pl. 20.

Suctoria.

Hesse's descriptions of *Sacculinidia gibbsii* and *S. herbstia-nodosa* (see Zool. Record, iv. p. 622) are translated in Ann. & Mag. Nat. Hist. ii. p. 234.

ROTIFERA

BY

E. Perceval Wright, M.A., M.D., F.L.S.

Archer, W. On a new species of Rotifer. Quart. Journ. Micr. Science, vol. xiv. (1868) p. 72.

Lankester, E. Ray. On a new Parasitic Rotifer, and on the *Synaptæ* of Guernsey and Herm. Quart. Journ. Micr. Science, vol. xvi. 1868, p. 53, woodcut.

Records the occurrence of a Rotifer, apparently undescribed, found parasitic in the body-cavity of *Synapta sarniensis* and *S. inhærens*. Associated with it was a very active *Trichodina*.

Schoch, G. Die mikroskopischen Thiere des Süsswasser-Aquariums für Freunde des Mikroskopes und der Naturwissenschaften. II. Buch. Die Räderthiere. 8vo, Leipzig, 1868, pp. 1–34, with 8 plates.

This interesting little work, though meant to be more of a popular than a scientific treatise, gives a very fair account of the general structure of the Rotifera, and, following Dujardin's classification of the Rotifers into R. sessilia, R. natantia, and R. repentia, proceeds to give details of some of the families of each suborder, as well as of the more remarkable genera and species. There are sixty figures, on eight plates; and though roughly drawn, the species are almost always recognizable.

Polychætus spinulosus, sp. n., Archer, *l. c.* p. 72, county Wicklow.

Claparède's remarks as to the mode in which certain Rotatoria introduce food into their mouths are translated in Ann. & Mag. Nat. Hist. vol. i. 1868, p. 309; also on *Balatro calvus*, ibid. p. 385 (*vide* 'Record,' 1867, p. 623).

ANNELIDA

BY

E. Perceval Wright, M.A., M.D., F.L.S.

A. *Separate Works.*

Claparède, E. Les Annélides Chétopodes du Golfe de Naples. Genève et Bâle. 1868, 4to, pp. 1–500, pl. 1–32.

This work is extracted from the 'Mémoires de la Société de Physique de Genève,' tomes xix. & xx., with the addition of a plate (pl. 32), which is reprinted from the Transactions of the Società Italiana di Scienze Naturali.

Two hundred and twenty-one species of Chetopod Annelids are enumerated as inhabiting the Gulf of Naples. Diagnoses, accompanied by elaborate anatomical details, are given of each species. It is needless to say more of this work, or of its illustrations, than that it is quite indispensable to every worker on this special group, and that it is worthy of its author. In the special part we give a list of the new genera and species, and we now and then call attention to a few of the more remarkable anatomical and physiological novelties alluded to by the author.

Ehlers, E. Die Borstenwürmer (Annelida Chætopoda) nach systematischen und anatomischen Untersuchungen dargestellt. 4to. Zweite Abtheilung. Schluss (mit Tafeln 12–24). Leipzig, 1868.

The concluding portion of the first volume of this work treats of the Eunicea, Lycoridea, Nephthydea, and Glycerea. Several new genera and species are described, and a list of known species is appended to each genus.

The want of an alphabetical index of genera and species to this volume will be very much felt by students; a two-page table of contents to a quarto volume of upwards of seven hundred pages is surely not sufficient.

B. *Papers published in Journals.*

Baird, W. Contributions towards a Monograph of the species of Annelids belonging to the Amphinomacea, with a list

of the known species and a description of several new species (belonging to the group) contained in the National Collection of the British Museum. Journal Linnean Soc. vol. x. no. 44, Nov. 26, 1868, pp. 215–246, pls. 4 & 6.

Baird, W. Monograph of the species of Worms belonging to the subclass Gephyrea, with a notice of such species as are contained in the Collection of the British Museum. Proc. Zool. Soc. Lond. 1868, pp. 76–114, pls 9–11.

Grube, Ed. Beschreibungen einiger von G. R. von Frauenfeld gesammelter Anneliden und Gephyreen des Rothen Meeres. Verhand. d. k.-k. zool.-botan. Gesell. in Wien, 1868, Bd. xviii. pp. 629–650, Taf. 7 & 8.

——. Ueber *Loxosiphon, Clœosiphon* und einige Phascolosomen. Jahres-Bericht der Schles. Gesellschaft, Breslau, 1868, pp. 47–49.

——. Ueber neue Anneliden. Ibid. pp. 50–52.

——. Ueber die Familie der Maldanien. Ibid. pp. 52–58.

Kinberg, J. G. H. Om Amphinomernas systematik. Œfvers. af K. Vet.-Akad. Förh. no. 3, 1867, pp. 83–91.

——. Om regeneration af hufvudet och de främre segmenterna hos en Annulat. Ibid. no. 2, pp. 53–57.

Lankester, E. Ray. On Lithodomous Annelids. Ann. & Mag. Nat. Hist. vol. i. 1868, pp. 233–238, pl. 11. (The author calls attention to some inaccuracies in this plate in the Annals for May, *vide* ibid. p. 392.)

M'Intosh, W. C. Report on the Annelids dredged off the Shetland Islands by Mr. Gwyn Jeffreys in 1867. Ann. & Mag. Nat. Hist. vol. ii. 1868, pp. 249–252.

In this report seven species of Annelids are indicated as new to science, and twenty-two are named as new to Britain.

——. On the boring of certain Annelids. Ibid. pp. 276–295, pls. 18-20.

Quatrefages, A. Observations sur une brochure de M. Claparède intitulée "De la structure des Annélides." Compt. Rend. lxvi. pp. 113–121 (January 1868).

Ratzel, F., und Warschawsky, M. Zur Entwickelungsgeschichte des Regenwurms (*Lumbricus agricola*, Hoffm.). Zeitschr. f. wissensch. Zoologie, Bd. xviii. 1868, pp. 547–562, Taf. 41.

—— ——. Beiträge zur anatomischen und systematischen Kenntniss der Oligochæten. Ibid. pp. 563–591, Taf. 42.

Ratzel, Fritz. Beiträge zur Anatomie von *Enchytræus vermicularis*, Henle. Zeitschr. f. wissensch. Zoologie, Bd. xviii. pp. 99–108, Taf. 6 & 7 (27th Dec. 1867).

Vaillant, L. Note sur l'anatomie de la *Pontobdella verrucata* (Leach). Compt. Rend. lxvii. pp. 77–79 (July 1868), and Ann. & Mag. Nat. Hist. vol. ii. 1868, pp. 170, 171.

——. Note sur l'anatomie de deux espèces du genre *Perichæta*, et essai de classification des Annélides Lombricines. Annal. des Scien. Naturel. 5e série, Zoologie, tome x. 1868, pp. 225–256, pl. 10.

The species described are *P. cingulata* and *P. posthuma*, Vaillant.

ANNELIDA POLYCHÆTA.

The following species are recorded as new to Britain by M'Intosh, *l. c.* p. 251 :—

Harmothoë longisetis, Grube; *Sigalion limicola*, Ehl.; *Nephthys ciliata*, O. F. M.; *Genetyllis lutea*, Mgrn.; *Anaitis kosteriensis* (?), Mgrn.; *Lumbrinereis fragilis*, O. F. M.; *Onuphis sicula*, Quatr. (determined as quite distinct from *O. tubicola*, O. F. M.); *Eone nordmanni*, Mgrn.; *Scoloplos armiger*, O. F. M.; *Naidonereis quadricuspidata*, Fabr.; *Trophonia glauca*, Mgrn.; *Chætopterus norvegicus*, Sars; *Scolecolepis cirrata*, Sars; *Axiothea catenata*, Mgrn.; *Praxilla gracilis*, Sars; *P. prætermissa*, Mgrn.; *Clymene ebiensis*, Aud. & Edw.; *Ampharete arctica*, Mgrn.; *Sabellides sexcirrata*, Sars; *Grymæa bairdi*, Mgrn.; *Euchone analis*, Kröyer; *Chone infundibuliformis*, Kröyer.

Claparède's list of species met with in the Gulf of Naples is too long to give here.

M. Milne-Edwards mentions the fact that Savigny's descriptions of Annelids were taken from specimens preserved in alcohol. Compt. Rend. lxvi. p. 121 (January 1868).

Aphroditidea.

Pontogenia, g. n., Claparède, *l. c.* p. 57. Antenna mediana multiarticulata antennæ laterales nullæ; oculi pedunculis suffulti; dorsum tela tomentosa tectum; setæ ramorum dorsualium crassæ, apice obtuso, flabellum efficientes, nunquam glochideæ; setæ ramorum ventralium perpaucæ, bidentatæ. Maxillæ nullæ. *P. chrysocoma*, Baird. This genus is not easily to be confounded with any other. It differs from *Hermione* by the conformation of its bristles; and its general configuration is very unlike. It approaches *Aphrogenia*, Kinberg; but to admit it the diagnosis of this genus must be altogether altered.

Lepidopleurus, g. n., Claparède, *l. c.* p. 105. *Polylepidæ* elytris mediocribus utrinque imbricatis, partem vero mediam dorsi non tegentibus. Antennæ laterales nullæ. Palpi longi. Maxillæ corneæ validissimæ. *L. inclusus*, sp. n., Claparède, *l. c.* p. 105, pl. 6. fig. 4.

Polynoë torquata, sp. n., Claparède, *l. c.* p. 68, pl. 11. fig. 3.

Polynoë (*Lepidonotus*) *quadricarinata*, sp. n., Grube, *l. c.* p. 630; *P. fumigata*, sp. n., Grube, *l. c.* p. 630.

Hermadion fragile, sp. n., Claparède, *l. c.* p. 73, pl. 5. fig. 2.

Psammolyce rigida, sp. n., Grube, *l. c.* p. 631, tab. 7. fig. 1.

Sthenelais ctenolepis, sp. n., Claparède, *l. c.* p. 88, pl. 4. fig. 1, & pl. 6. fig. 2. In speaking of the vibratile cilia of the perivisceral cavity of this species Claparède, in a footnote, says (p. 92), "M. Williams a décrit et figuré déjà les cils vibratiles de l'intérieur de la branchie . . . Bien souvent encore, dans le cours de ce mémoire, j'aurai à relever d'excellentes observations dues à M. Williams. . . . . Je suis le premier à reconnaître que les recherches de M. Williams sont mal digérées, qu'elles fourmillent d'erreurs résultant en grande partie d'une culture spéciale insuffisante; mais je ne pense pas qu'il faille mépriser un métal précieux parce qu'il est enfermé dans une gangue de moindre valeur."

Sthenelais fuliginosa, sp. n., Claparède, *l. c.* p. 94, pl. 4. fig. 2; *S. leiolepis*, sp. n., Claparède, *l. c.* p. 96, pl. 4. fig. 3, & pl. 6. fig. 1. This latter species resembles somewhat closely *S. limicola* (Ehl.); the most easily marked distinction is that *S. leiolepis* has constantly four eyes, while *S. limicola* has but two.—*S. dendrolepis*, sp. nov., Claparède, *l. c.* p. 99, pl. 4. fig. 4, & pl. 5. fig. 1.

Pholoë synophthalmica, sp. n., Claparède, *l. c.* p. 79, pl. 3. fig. 1. The only individual observed presented the peculiarity, perhaps unique among the Aphrodites, of having elytra on the buccal segment.

Eunicea.

Ehlers would characterize this family as follows (*l. c.* p. 280) :—

A. *The interposing pieces forming the upper jaw heterogeneous; the pieces following on the "Träger," the untoothed pincers* (*Zange*), *and the tooth become surrounded by a half circle of smaller pieces. The pinnæ single, with several bundles of setæ* (Eunicea labidognatha).

I. The two halves of the upper jaws having an unequal number of pieces —one more in the left than in the right half. Cephalic segment with tentacles (*E. l. tentaculata*).

1. Five posterior and two anterior long tentacles. *Heptaceras*, g. n.
2. Five long posterior, two stumpy anterior tentacles.
   - *a.* Two tentacular cirri ..... *Diopatra* (Aud. & Edw.).
   - *b.* Tentacular cirri wanting .. *Onuphis* (Aud. & Edw.).
3. Five tentacles; branchiæ present.
   - *a.* Two tentacular cirri.. *Eunice* (Cuv.).
   - *b.* Tentacular cirri wanting *Marphysa* (Qtrfg.).
4. Five tentacles; no branchiæ..... *Nicidion* (Kinb.).
5. Three tentacles
   - *a.* Branchiæ present .... *Amphiro* (Kinb.).
   - *b.* Branchiæ wanting.... *Lysidice* (Sav.).
6. One tentacle
   - *a.* With dorsal cirri .... *Nematonereis* (Schm.).
   - *b.* No dorsal cirri ..... *Blainvillea* (Qutrfg.).

II. Both halves of the jaws with an equal number of pieces. Cephalic segment without true tentacles (*E. l. nuda*).

1. With branchiæ ..... *Ninoë* (Kinb.).
2. Without branchiæ..... *Lumbriconereis* (Bl.).

B. *The pieces composing the upper jaw placed one behind the other in rows, and more or less alike in form. Pinnæ single, with one bundle of setæ, or bifid, with two bundles* (Eunicea prionognatha).

I. Pinnæ single, with simple setæ (*E. p. monocopa*).

1. Dorsal cirri stunted or wanting.

a. The first pair of teeth with pincer-shaped end hooks.

a. These alike.

† All the teeth alike.

§ Five pairs of teeth..... *Aracoda* (Schm.).

§§ Four pairs of teeth ..... *Laranda* (Kinb.).

†† The first pair of teeth unlike ..... *Arabella* (Gr.).

β. The pincer-shaped teeth unlike .... *Larymna* (Kinb.).

b. The first pair of teeth without pincer-shaped end hooks.

α. With stunted dorsal cirri ..... *Notocirrus* (Schm.).

β. Without dorsal cirri ..... *Notopsilus* (Ehlers).

2. Dorsal cirri blade-like.

a. Träger in upper jaw long, bar-shaped.

α. Tentacles wanting ..... *Œnone* (Sav.).

β. Three tentacles.

† Cephalic segment covered by first segment.

Aglaurides (Ehlers).

†† Cephalic segment free.

§ Two eyes; five pairs of uneven jagged teeth on the Träger.

Cirrobranchia, g. n.

§§ Four eyes; six pairs of teeth on the Träger.

Danymene (Kinb.).

b. Träger of the upper jaw short, plate-like. *Lysarete* (Kinb.).

II. Pinnæ bifid, with simple and compound setæ (*E. p. dicopa*).

Staurocephalus (Grb.).

Heptaceras, g. n., Ehlers, *l. c.* p. 284. Head-segment with five posterior and two anterior filiform tentacles, two palpi, two tentacular cirri. Branchiæ from the first pinna; the first simple, filiform; those at a distance with spirally set threads. Dorsal cirri leaf-like. *H. phyllocirrum* = *Diopatra phyllocira* (Schmarda).

Diopatra teres, sp. n., Ehlers, *l. c.* p. 203, Sidney.

Onuphis tubicola (O. F. M.). Ehlers describes and figures this Annelid. Referring to Malmgren's genus *Hyalinœcia*, he says, "I see no pressing occasion for it," *l. c.* p. 296.—*O. sicula*, Quat., is quoted as a synonym.

Onuphis pancerii, sp. n., Claparède, *l. c.* p. 128, pl. 8. fig. 1.

Hyalinœcia rigida, sp. n., Claparède, *l. c.* p. 131, pl. 8. fig. 2.

Eunice rubrocincta, sp. n., Ehlers, *l. c.* p. 344, Taf. 15. figs. 4–14, Quarnero; *E. limosa*, sp. n., Ehlers, *l. c.* p. 348, Taf. 15. figs. 15–22, Quarnero.

Eunice cingulata, sp. n., Claparède, *l. c.* p. 134, pl. 7. fig. 1.

Marphysa floridana, sp. n., Pourtales (vide *suprà*, p. 538), *l. c.* p. 108, off Sand Key, 100 fathoms; *M. tibiana*, sp. n., Pourtales, *l. c.* p. 108, off Havana, 270 fathoms; *M. antipathum*, sp. n., Pourtales, *l. c.* p. 109, with last species.

Lysidice margaritacea, sp. n., Claparède, *l. c.* p. 143, pl. 8. fig. 3.

Nematonereis oculata, sp. n., Ehlers, *l. c.* p. 374, Taf. 16. figs. 19–22, Quarnero.

Lumbriconereis filum, sp. n., Claparède, *l. c.* p. 144, pl. 10. fig. 1.

Lumbriconereis impatiens=*Lumbricus fragilis*, Delle Chiaje (non Müller), Claparède, *l. c.* p. 149, pl. 11. fig. 2.

Lumbriconereis gracilis, sp. n., Ehlers, *l. c.* p. 393, Taf. 17. figs. 6–10, Quarnero.

Notocirrus geniculatus, sp. n., Claparède, *l. c.* p. 149, pl. 6. fig. 6.

Notopsilus, g. n., Ehlers, *l. c.* p. 406, for *N. acutus*=*Lais acutus*, Kinberg, *Lais* being preoccupied for a genus of Mites by De Filippi.

Aglaurides, g. n., Ehlers, *l. c.* p. 408. This generic name is substituted for *Aglaura*, Savigny, preoccupied by Péron and Lesueur for an Acaleph.

Cirrobranchia, g. n., Ehlers, *l. c.* p. 408. Cephalic segment free, with three short tentacles arranged in a cross row on the posterior surface and on both sides of which is a dark eye-spot; first and second segments without pinnæ. Pinnæ two-lipped; the under somewhat larger than the upper. Setæ simple (limbatæ). Dorsal cirri leaf-like, springing out with a short stem. Under the pinnæ on the ventral side a knob with a dimple on the apex. Anal segment with four anal cirri. Upper jaw with two long slender Träger, on which are five pairs of irregular serrated jaw-pieces; under jaw formed of two compact pieces, thickened before and behind and almost smooth. *C. parthenopeia* (Delle Chiaje).

Staurocephalus chiaji, sp. n., Claparède, *l. c.* p. 115, pl. 7. fig. 2.

Zygolobus (*Zygophyllus* in description of plate) *gracilis*, sp. n., Grube, *l. c.* p. 634, Taf. 7. fig. 3.

Amphinomea.

Kinberg (*l. c.*) would arrange the *Amphinomea* as follows:—

I. The Chloeia Group.

Chloeia, Savigny, with the species *C. flava*, Pallas, *C. viridis*, Schmarda, *C. bengalensis*, sp. n., Bengal; *C. malaica*, sp. n., Malacca Straits.

Thesmia, g. n., Kinberg, *l. c.* p. 86. Setæ infra apices inflatæ, apicibus setarum dorsualium singulis, ventralium binis et ternis. Species *T. flava* (Quatr.).

Chloenea, g. n., Kinberg, *l. c.* p. 86. Antennæ et palpi a segmento buccali, setæ dorsuales serratæ et bifidæ, ventrales bifidæ. Species *C. candida*, Kinb., and *C. pallida*, sp. n., Brazil.

Chloochæta, g. n., Kinberg, *l. c.* p. 86. Setæ dorsuales filiformes, ventrales illas æquantes l. vix bidentatæ. Habitus *Chloeiæ*. Species *C. inermis* (Quatr.), *C. nuda* (Quatr.), *C. venusta* (Quatr.), and *C. egeria* (Grube).

Strategis, g. n., Kinberg, *l. c.* p. 86. Setæ dorsuales serratæ, ventrales filiformes aliæque bifidæ. Habitus *Chloeiæ*. Species *S. fucata* (Quatr.).

II. Notopyge Group.

Notopyge, Grube. *N. ornata*, Grube.

Lirione, g. n., Kinberg, *l. c.* p. 87. *L. splendens* and *L. maculata*, new species from Tahiti and Panama, Kinberg, *l. c.* 87.

III. Aphinome Group.

Amphinome, Brug., with several new species.

Asloegia, g. n., Kinberg, *l. c.* p. 89. Carunculus sulcatus; antennæ a segmento buccali et ex parte a lobo cephalico orientes; setæ dorsuales aciculæformes, læves. *A. capillata*, sp. n., Bahia.

Colonianella, g. n., Kinberg, *l. c.* p. 89. Carunculus circularis; setæ dorsuales obsolete serrulatæ, aliæ quadrupliciter serratæ, ventrales leviter arcuatæ. *C. rostrata*, sp. n., La Plata.

Hermodice, with several new species.

Amphibranchus, g. n., Kinberg, *l. c.* p. 90. Carunculus lamellosus; branchiæ pedum dorsualium binæ. *A. didymobranchiatus* (Baird) and *A. occidentalis*, sp. n.

Blenda, g. n., Kinberg, *l. c.* p. 90. Rami branchiarum sessiles; setæ dorsuales lævis, arcuatæ, obtusæ; ventrales bifidæ. *B. armata*, sp. n., Panama.

Lycarctus (A), g. n., Kinberg, *l. c.* p. 55. Corpus longum, depressum, segmentis rectangulis. Lobus cephalicus rotundatus, carunculo elongato sublævi, tentaculo, oculis 4. Antennæ 2 et palpi 2 a segmento buccali orientes. Branchiæ a segmento tertio incipientes. Cirri dorsuales pedis cujusque dorsualis unicus. Setæ pedum dorsualium capillares subgeniculatæ aliæque serratæ, ventralium bifidæ apicibus inæqualibus, lævibus. *L. neocephalicus*, sp. n., Kinberg, *l. c.* p. 56, West Indies. The author describes (*l. c.*) a very remarkable regeneration of the anterior portion of the body of this species.

Eurythoë, with ten new species. The descriptions of all the new species mentioned in the above are promised in a forthcoming Part of the 'Eugenies Resa.'

Chloeia bistriata, sp. n., Grube, *l. c.* p. 631, Taf. 7. fig. 2.

Chloeia tumida, sp. n., Baird, *l. c.* p. 232, pl. 4. figs. 7, *a–d* (setæ), India; *C. parva*, sp. n., Baird, *l. c.* p. 233, pl. 4. figs. 8, *a*, *b* (setæ); *C. spectabilis*, sp. n., Baird, *l. c.* p. 234, New Zealand; *C. puchellla* (misprint for *pulchella*), sp. n., Baird, *l. c.* p. 234, Australia.

Liriome rayneri, sp. n., Baird, *l. c.* p. 226, pl. 4. figs. 6, *a*, *b* (setæ), Australia.

Amphinome jukesi, sp. n., Baird, *l. c.* p. 218, pl. 4. figs. 2, *a*, *b* (setæ), Australia.

Hermodice nigrolineata, sp. n., Baird, *l. c.* p. 220, Coast of Asia Minor, on the submarine telegraph-cable near Alexandria.

? *Eurythoë clavata*, sp. n., Baird, *l. c.* p. 224, pl. 4. figs. 5, *a*, *b* (setæ), habitat unknown. Described from a single specimen.

Hipponoë cranchii, sp. n., Baird, *l. c.* p. 240, pl. 6. figs. 7–14, collected in the Congo Expedition.

Euphrosyne audouini, Costa, = *Euphrosyne racemosa*, Ehlers. Claparède (*l. c.* p. 109) mentions that the bristles of this species are not only tubular, a fact already observed by Ehlers, but almost entirely calcareous, disappearing with rapid effervescence on the application of acetic acid.

Nephthydea.

Ehlers, *l. c.* p. 587, assigns to this family the two genera:—

1. *Nephthys* (Cuv.). Cephalic segment with 4 tentacles; one anal cirrus.
2. *Portelia* (Qutrfg.). Cephalic segment with 2 tentacles; two anal cirri.

Nephthys (= *Aonis*, Sav., = *Diplobranchus*, Quatrf., = *Aglaophamus* and *Aglaopheme*, Knbg.), Ehlers, *l. c.* p. 587; *N. cæca*, O. Fab. (= *N. margaritacea*, Johnst. 1835), Ehlers, *l. c.* p. 589.

Nephthys bucera, sp. n., Ehlers, *l. c.* p. 617, Taf. 23. fig. 8, Massachusetts Bay; *N. cirrosa*, sp. n., Ehlers, *l. c.* p. 624, Taf. 23. figs. 6, 37, & 38, English coast; *N. discors*, sp. n., Ehlers, *l. c.* p. 626, Taf. 23. figs. 39, 40, Eastport;

N. picta, sp. n., Ehlers, *l. c.* p. 632, Taf. 23. figs. 9 & 35, east coast of North America; *N. nudipes*, sp. n., Ehlers, *l. c.* p. 635, Taf. 23. fig. 41, Bergen.

Cirratulea.

Cirratulus chrysoderma, sp. n., Claparède, *l. c.* p. 262, pl. 23. fig. 4.

Chloræmea.

Trophonia eruca, sp. n., Claparède, *l. c.* p. 365, pl. 25. fig. 2.
Siphonostomum tenerum, sp. n., Grube, *l. c.* p. 636.

Lycoridea (*Nereïdea*).

Ehlers (*l. c.* pp. 449) arranges the genera as follows:—

A. Pinnæ single ..... *Lycastis* (Aud. & M.-Edw.),
B. Pinnæ bifid.
a. With simple dorsal cirri.
1. With upper and under lingulæ..... *Nereis* (Cuv.).
2. Without upper lingulæ..... *Ceratocephale* (Mgrn.).
3. Without under lingulæ..... *Tylorhynchus* (Grube).
b. With plumed dorsal cirri ..... *Dendronereis* (Peters).

Nereis floridana, sp. n., Ehlers, *l. c.* p. 503, Florida; *N. cylindrata*, sp. n., Ehlers, *l. c.* p. 506, Taf. 21. figs. 37, 40, Quarnero; *N. nigripes*, sp. n., Ehlers, p. 508, Florida, Hayti; *N. rava*, sp. n., Ehlers, *l. c.* p. 517, Taf. 21. figs. 10–25, Quarnero; *N. rubicunda*, sp. n., Ehlers, *l. c.* p. 529, Taf. 20. figs. 4–7, Taf. 21. figs. 5–9; *N. californica*, sp. n., Ehlers, *l. c.* p. 533, Mendocino; *N. agassizi*, sp. n., Ehlers, *l. c.* p. 542, Taf. 23. fig. 1, Gulf of Georgia and Mendocino; *N. flavipes*, sp. n., Ehlers, *l. c.* p. 549, Taf. 21. figs. 26–30, Quarnero; *N. acuminata*, sp. n., Ehlers, *l. c.* p. 552, Taf. 22. figs. 23–28, Naples; *N. procera*, sp. n., Ehlers, *l.* c. p. 557, Taf. 23. fig. 2, Gulf of Georgia; *N. lamellosa*, sp. n., Ehlers, *l. c.* p. 565, Taf. 22. figs. 10–17, Logosta, Adriatic; *N. limbata*, sp. n., Ehlers, *l. c.* p. 567, New York Bay, Boston, &c.

Nereis peritonealis, sp. n., Claparède, *l. c.* p. 157, pl. 9. fig. 5; *N. perivisceralis*, sp. n., Claparède, *l. c.* p. 161, pl. 12. fig. 1; *N.* (*Ceratonereis*) *guttata*, sp. n., Claparède, *l. c.* p. 165, pl. 9. fig. 6, pl. 10. fig. 3.

Nereis vancaurica, Ehlers, = *N. languida*, Grube, the latter name already preoccupied by Kinberg for a *Nereis* from Port Jackson. Ehlers, *l. c.* p. 20.—*N. kinbergi*, Ehlers, = *N. variegata*, Kinberg, the latter name being already used by Grube. Ehlers, *l. c.* p. 20.

Nereis (*Nereilepas*) *parallelogramma*, Claparède, = *N. pulsatoria*, Grube, nec non *N. pulsatoria*, Mont. (Sav.), *vide* Claparède, *l. c.* p. 167.

Nereis foliata, Baird (1866), = *N. brandtii*, Malmg. (1865), = *N. virens*, Grube. Ehlers, *l. c.* p. 553.

Heteronereis malmgreni, sp. n., Claparède, *l. c.* p. 173, pl. 11. fig. 1.

Syllidea.

Sphærosyllis. Claparède (*l. c.* p. 204) emends the diagnosis of this genus as given in his 'Glanures,' by substituting for the words "the tentacular cirri" "a single pair of tentacular cirri on the buccal segment." This genus has not been correctly defined by either Quatrefages or Ehlers. *S. pirifera*, sp. n., Claparède, *l. c.* p. 205, pl. 14. fig. 2.

Grubea, Qtrfg. Claparède amends the characters of this genus, *l. c.* p. 206. *G. limbata*, sp. n., Claparède, *l. c.* p. 208, pl. 13. fig. 4.

Pædophylax, g. n., Claparède, *l. c.* p. 210. Palpi maximi coaliti, sulco tamen medio ventrali profundo separati. Proboscis aculeo unico armata. Proventriculi paries glandulosus, ventriculo brevissimo, glandulis lateralibus binis saccatis. Antennæ tres. Oculorum paria duo aliud lobo cephalico aliud segmento buccali insidens. Cirrorum tentacularium par unum. Cirri dorsuales et ventrales fere obsoleti. (Generatio alternans deest. Feminæ ova ad eclosionem usque gerunt.) Near to *Exogone*, Œrst., and *Exotokas*, Ehlers. *P. claviger*, sp. n., Claparède, *l. c.* p. 211, pl. 13. fig. 2; *P. veruger*, sp. n., Claparède, *l. c.* p. 213, pl. 13. fig. 3.

Anoplosyllis, g. n., Claparède, *l. c.* p. 214. *Syllidæ* palpis haud productis, fere obsoletis. Proboscis brevissima inermis. Antennæ tres. Cirrorum tentacularium paria bina segmento buccali insidentia. Pedes cirris dorsualibus et ventralibus præditi. *A. edentula*, sp. n., Claparède, *l. c.* p. 214, pl. 12. fig. 2.

Trypanosyllis cæliaca, sp. n., Claparède, *l. c.* p. 203, pl. 13. fig. 3. (It is remarkable that in this species the biliary intestine is prolonged beyond its point of attachment to the ventricule; beyond not only it, but also the proventricule and the proboscis, terminating in a cæcum in the sixth segment; it forms lateral pockets in each segment.)

Syllis hamata, sp. n., Claparède, *l. c.* p. 195, pl. 15. fig. 2; *S. bacilligera*, sp. n., Claparède, *l. c.* p. 198, pl. 14. fig. 4; *S. aurantiaca*, sp. n., Claparède, *l. c.* p. 200, pl. 14. fig. 3, & pl. 13. fig. 5.

Odontosyllis ctenostoma, sp. n., Claparède, *l. c.* p. 202, pl. 12. fig. 4.

Autolytus hesperidum, sp. n., Claparède, *l. c.* p. 216, pl. 14. fig. 4.

Procerœa aurantiaca, sp. n., Claparède, *l. c.* p. 219, pl. 15. fig. 1.

Myrianida maculata, sp. n., Claparède, *l. c.* p. 222, pl. 13. fig. 1.

Gattiola, Johnst. Claparède remarks (*l. c.* p. 224) that the genus *Nicotia*, Ach. Costa, 1864, has the priority over *Gattiola*, Johnston, 1865. He does not feel quite sure that there is any occasion for adopting this genus, as the species fall very easily under the genus *Pterosyllis*. *Vide* Claparède, *l. c.*, and Zool. Record, 1867, p. 633.

Autolytus prolifer. Dr. R. Greef's paper is translated from the Archiv für Naturgeschichte for 1866 in Ann. & Mag. Nat. Hist. vol. i. 1868, pp. 173–183, pl. 8. *Vide* Zool. Record, 1867, pp. 579 & 587.

Hesionea.

Tyrrhena, g. n., Claparède, *l. c.* p. 227. *Hesionidæ* segmentis haud numerosis compositæ, lobo cephalico antennas quinque tuberculumque frontale præbente. Pedum ramus superior setis capillaribus, inferior festucis instructus. Cirrorum tentacularium paria octo. Proboscidis maxillæ duæ. Near to *Castalia*, Œrst. *T. claparedii*, Ach. Costa, n. sp., Claparède, *l. c.* p. 228, pl. 18. fig. 2.

Telamone, g. n., Claparède, *l. c.* p. 231. Corpus segmentis paucis compositum, antennis duabus. Cirrorum tentacularium paria sex. Pedes uniremes, festucis armati. Proboscis inermis. *T. sicula*, Delle Chiaje, Claparède, *l. c.* p. 231, pl. 18. fig. 4.

Psamathe, Johnst. Claparède remarks that this genus was founded by John-

ston in 1830 for a species, *P. fusca*, without jaws. But later Johnston identified his *P. fusca* with *Castalia punctata*, Œrst., a species having two jaws; instead of adopting Savigny's genus *Castalia*, established in 1817, he still wrote his species as *Psamathe punctata*. Malmgren annuls, therefore, the genus *Psamathe*. Keferstein in the meanwhile describes, under the name of *P. cirrata*, a worm deprived of jaws, and corresponding in great measure to the original genus described by Johnston. The genus, therefore, as emended by Keferstein will stand. Claparède, *l. c.* p. 225–226.

Phyllodocea.

Phyllodoce corniculata, sp. n., Claparède, *l. c.* p. 236, pl. 17. fig. 1.

Anaitis cephalotes, sp. n., Claparède, *l. c.* p. 238, pl. 17. fig. 3.

Eteone armata, sp. n., Claparède, *l. c.* p. 240, pl. 17. fig. 5; *E. lactea*, sp. n. Claparède, *l. c.* p. 243, pl. 18. fig. 2.

Eulalia (*Eumida*) *pallida*, sp. n., Claparède, *l. c.* p. 246, pl. 16. fig. 6; *E.* (*E.*) *microceros*, sp. n., Claparède, *l. c.* p. 247, pl. 16. fig. 4; *E.* (*Pterocirrus*) *limbata*, sp. n., Claparède, *l. c.* p. 248, pl. 27. fig. 6; *E.* (*P.*) *marginata*, sp. n., Claparède, *l. c.* p. 249, pl. 18. fig. 1; *E.* (*P.*) *velifera*, sp. n., Claparède, *l. c.* p. 250, pl. 17. fig. 2.

Glycerea.

Ehlers arranges this family as follows (*l. c.* p. 644):—

A. Proboscis, with 4 similar jaws, carrying large glandular appendages .... on all segments alike. *G. tetragnatha.*

1. Pinnæ simple, with only one bundle of compound setæ. *Hemipodus* (Qtrfg.).

2. Pinnæ with two or less thick coalesced arms. Two bundles of setæ ..... *Glycera* (Sav.).

B. Proboscis with several dissimilar jaws, without glandular appendage. *G. polygnatha.*

Pinnæ on the anterior differing from those of the posterior part of the body ..... *Goniada* (Aud. & M.-Edw.).

Glycera robusta, sp. n., Ehlers, *l. c.* p. 656, Taf. 24. figs. 31, 32, California; *G. follicülosa*, sp. n., Ehlers, *l. c.* p. 658, Naples; *G. dibranchiata*, sp. n., Ehlers, *l. c.* p. 670, Taf. 24. figs. 1, 3–8, 10–28, East coast of N. America.

Chætopteridea.

Telepsavus costarum, sp. n., Claparède, *l. c.* p. 340, pl. 20. fig. 1.

Phyllochætopterus socialis, sp. n., Claparède, *l. c.* p. 345, pl. 21. fig. 1. *P. fallax*, sp. n., Claparède, *l. c.* p. 350, pl. 21. fig. 2; *P. major*, sp. n., Claparède, *l. c.* p. 352, pl. 19. fig. 1.

Clymenea.

Grube (*l. c.* p. 54) proposes the following arrangement of the *Maldanidæ* (*Clymenea*):—

1. The terminal segment infundibuliform. The anal orifice in the middle of the funnel.

a. In almost all the forms belonging to this section the rim of the funnel runs into prongs or teeth, as in *Clymene*, Sav.; and, regarding Malmgren's genera as nothing but subgenera, we have the following species:—

16 setæ-bearing segments: *C. zostericola*, Qtrfg.

17 setæ-bearing segments (with four anteanal segments): *C.* (*Axiothea*) *catenata*, Mgn.; *C. modesta*, Qtrfg.; *C. lyrocephala*, Schm.

18 setæ-bearing segments (according to Qtrfg.): *C. uranthus*, Sav. (Savigny gives 19 setæ-bearing and 4 anteanal segments).

19 setæ-bearing segments and 5 anteanal segments (*Praxilla*): *P. prætermissa*, Mgn.; *P. arctica*, Mgn.; *P. kefersteini*, Kbg.; *C. gracilis*, Sars; and *C. muelleri*, Sars.

19 setæ-bearing segments and 3 anteanal segments: *C. lumbricoides*, M.-Edw.; *C. diadema*, sp. n., Grube.

19 setæ-bearing segments, and 2 anteanal segments: *C. digitata*, Gr.; *C. ærstedii*, Clap.

22 setæ-bearing segments and 2 anteanal segments: *C. palermitana*, Gr.

23 setæ-bearing segments (?) and 3 anteanal segments: *C. amphistoma*, Sav.

b. The rim of the funnel smooth, without teeth (*Leiochone*): *C. urceolata*, Leid., and *C. leiopygos*, Grube.

2. The terminal segment without a funnel. The anus lies to the dorsal side: *Chrysothemis amœna*, Kbg.; *Sabaco maculatus*, Kbg.; *Maldane biceps* (Sars); *M. sarsii*, Mgn.; *M. glebifex*, Gr.; *Petaloproctus terricola*, Qtrfg.

Praxilla simplex, sp. n., Claparède, *l. c.* p. 452, pl. 27. fig. 7; *P. collaris*, sp. n., Claparède, *l. c.* p. 454, pl. 26. fig. 2.

Axiothea constricta, sp. n., Claparède, *l. c.* p. 455, pl. 26. fig. 3 (in text, by a mistake, referred to as fig. 2).

Maldane cristagalli, sp. n., Claparède, *l. c.* p. 457, pl. 26. fig. 4.

Owenia filiformis, Delle Chiaje = *Ammochares ottonis*, Grube. Delle Chiaje never published a description of this genus or species; but his figure of it (with this name attached) leaves it impossible not to recognize the species. Claparède, therefore, does not hesitate to accede to it priority (1842) over Grube's name (1846). Claparède, *l. c.* p. 446, pl. 26. fig. 5.

Notomastus lineatus, sp. n., Claparède, *l. c.* p. 278, pl. 27. fig. 4.

Capitella costana, sp. n., Claparède, *l. c.* p. 275, pl. 27. fig. 2; *C. major*, sp. n., Claparède, *l. c.* p. 276, pl. 27. fig 3.

Opheliea.

Ophelia radiata (Delle Chiaje). Claparède, *l. c.*, in describing this species, calls attention (p. 287) to the fact that the fluid of the perivisceral cavity holds in suspension corpuscles of two very different sorts: one consists of circular disks, from the circumference of which project filiform prolongations, sometimes bifid and trifid; sometimes both are very granular in texture. At the first glance they look like so many thousands of an *Actinophrys*; but there is not the least movement in the pseudopodal-like prolongations. Their constant presence precludes the idea of

parasitism. Many of these disks enclose one or two clear vesicles; but no reagent demonstrates the existence of a nucleus.

The corpuscles of the second class bear to the former a certain resemblance, but are vastly larger, with longer processes; their contents are often rendered areolar by the presence of a large number of vesicles; but the most remarkable characteristic is the presence of a *hard* body in their interior. This hard body, varying in colour from a clear brown to a deep black, is like a sort of cylindrical rectilinear or curved rod, sometimes sinuous, the two extremities of which are sometimes twisted into a wisp, sometimes flattened out. These extremities are always covered with a thin layer of the protoplasmic prolongations; they are insoluble in strong or weak acetic acid. Gab. Costa appears to have been the first to point out these strange organisms. Kowalewsky briefly mentions them in his Memoir on Ctenophora (*vide* Zool. Rec. 1866, pp. 621 and 632).

Ophelia polycheles, sp. n., Grube, *l. c.* p. 635, Taf. 7. fig. 5.
Polyophthalmus pallidus, sp. n., Claparède, *l. c.* p. 294, pl. 31. fig. 7.

Arenicolea.

Arenicola grubii, sp. n., Claparède, *l. c.* p. 296, pl. 19. fig. 2.

Ariciea.

Aricia fœtida, sp. n., Claparède, *l. c.* p. 306, pl. 20. fig. 2.
Theodisca liriostoma, sp. n., Claparède, *l. c.* p. 310, pl. 24. fig. 2.

Leucodorea.

Polydora agassizii, sp. n., Claparède, *l. c.* p. 314, pl. 22. fig. 1; *P. hoplura*, sp. n., Claparède, *l. c.* p. 318, pl. 22. fig. 2; *P. attenuata*, sp. n., Claparède, *l. c.* p. 320, pl. 21. fig. 3.

Spio fuliginosus, sp. n., Claparède, *l. c.* p. 322, pl. 23. fig. 1; *S. mecznikowianus*, sp. n., Claparède, *l. c.* p. 324, pl. 23. fig. 2.

Nerine sarsiana, sp. n., Claparède, *l. c.* p. 330, pl. 21. fig. 4; *N. auriseta*, sp. n., Claparède, *l. c.* p. 331, pl. 24. fig. 2.

Prionospio malmgreni, sp. n., Claparède, *l. c.* p. 333, pl. 22. fig. 3. (The diagnosis of the genus *Prionospio* is emended by Claparède.)

Polydora (*Leucodore*, Johnst.) *calcarea*, Temp., is described by Lankester (*l. c.*) as boring into rocks composed in whole or in part of carbonate of lime. He believes this boring to be effected by means of an acid, and mentions that specimens of this species placed on litmus-paper gave a strong acid reaction.

In the 'Annals' for July, p. 76, Lankester refers to papers on Lithodomous Annelids, by Grube and L.-Duthiers.

Leucodore (*Polydora*) *ciliata*, Johnst., is figured, and the tentacles, bristles, and anal segments are carefully described by M'Intosh, *l. c.* p. 283, pls. 17 and 19. In his remarks on the boring of this Annelid, he disproves the theory of the boring-powers of the Annelids being due to a purely chemical agency;

but he for the present promulgates no new theory, and does not give his support to any of the old ones.

Dodecaceria concharum, Œrst., and *Sabella saxicava*, Qtrf., are also described by Dr. M'Intosh in connexion with this subject.

Terebellea.

Heteroterebella sanguinea, sp. n., Claparède, *l. c.* p. 388, pl. 30. fig. 1, and pl. 29. fig. 3.

Terebella flavescens, sp. n., Claparède, *l. c.* p. 396, pl. 23. fig. 6; *T. vestita*, sp. n., Claparède, *l. c.* p. 397, pl. 11. fig. 4; *T. lævirostris*, sp. n., Claparède, *l. c.* p. 399, pl. 11. fig. 5; *T. sulcigera*, sp. n., Claparède, *l. c.* p. 400, pl. 18. fig. 5.

Heterophenacia nucleolata, sp. n., Claparède, *l. c.* p. 401, pl. 18. fig. 8.

Polycirridæ. Claparède (*l. c.* p. 405) admits the following genera, and thus arranges them :—

A. The "pharetræ" setigerous, and tori uncinigerous.

a. Oncial disks avicular.

a. Dorsal bristles to the extremity of the body.

Aphlebina, Qtrfg.

(*Apneumæa*, Qtrfg.; *Polycirrus*, Mlmgr.)

β. Dorsal bristles in the anterior region only.

Polycirrus, Grube, *non* Mlmgr.

(*Leucariste*, Mlmgr.; *Ereutho*, Mlmgr.)

b. Oncial disks sublinear, aciculiform. Amœa, Mlmgr.

B. Pharetræ (*rame dorsale*) dorsal. No oncial disks.

Lysilla, Mlmgr.

Polycirrus caliendrum, sp. n., Claparède, *l. c.* p. 406, pl. 29. fig. 2.

Phenacia ambigrada, sp. n., Claparède, *l. c.* p. 402, pl. 18. fig. 6; *P. retrograda*, sp. n., Claparède, *l. c.* p. 403, pl. 18. fig. 7.

Serpulea.

Branchiomma köllikeri, sp. n., Claparède, *l. c.* p. 423, pl. 22. fig. 4.

Laonome salmacidis, sp. n., Claparède, *l. c.* p. 427, pl. 24. fig. 4 (an hermaphrodite species).

Dialychone, g. n., Claparède, *l. c.* p. 429. Sabellidæ regione thoracica hamis manubrio longo armata insignes; branchiæ membrana palmari pinnisque dorsualibus omnino destitutæ. Collare integrum. This genus is near *Chone*, Kröy., and *Euchone*, Mlmgr. *D. acustica*, sp. n., Claparéde, *l. c.* p. 430, pl. 30. fig. 3.

Psygmobranchus multicostatus, sp. n., Claparède, *l. c.* p. 435, pl. 30. fig. 6.

Salmacina, g. n., Claparède, *l. c.* p. 436. Serpulidæ membrana thoracica instructæ, branchiis æqualibus basi circulari, operculo destitutis. Segmentum thoracicum primum utrinque fasciculo setarum dorsualium sequentibus multo majorum, formaque distinctarum munitum. Tubus calcareus. *S. incrustans*, Claparède, *l. c.* p. 436, pl. 30. fig. 5,=? *Serpula intricata* (Linn.), Grube.

Protula dysteri, Hux., may probably be referred to this genus.

Eupomatus lunulifer, sp. n., Claparède, *l. c.* p. 441, pl. 31. fig. 3.

Pileolaria, g. n., Claparède, *l. c.* p. 443. Serpulidæ membrana thoracica munitæ, branchiis paucis; operculo compresso, calcareo, dentato. Tubus cretaceus, spiralis. *P. militaris*, sp. n., Claparède, *l. c.* p. 444, pl. 16. fig. 5.

Sabella alticollis, sp. n., Grube, *l. c.* p. 638, Taf. 7. fig. 6.
Serpula (Eupomatus) heteroceros, sp. n., Grube, *l. c.* p. 639, Taf. 7. fig. 8.
S. gervaisii, Qtrfg. ?, Grube, *l. c.* p. 640, Taf. 7. fig. 7.

ANNELIDA OLIGOCHÆTA.

Vaillant (*l. c.*) proposes the following arrangement of the Order Annelida Lumbricina = Oligochæta :—

Setæ simple (*Lumbricina*).
Setæ isolated or grouped two by two* ..... Lumbricina propria.
Setæ three or four in number, in bundles .... Enchytræina.
Setæ bifid or hair-like, at least partly, rarely pectinated (*Naidea*).
Setæ in four rows, exceptionally biserial, and then all hair-like. Naidea propria.
Setæ biserial, never hair-like ..... Chætogastrina.

Family I. LUMBRICINA.

Tribe I. Lumbricina propria.

One row of setæ on the dorsal line, at least anteriorly.

Setæ very numerous, regularly distributed round the body. *Perichæta*, Schmarda.
Setæ very numerous, collected together on the papillæ at the dorsal region. *Megascolex*, Templeton†.
Setæ nine or more in number on each ring, alternating longitudinally from ring to ring ..... *Pontoscolex*, Schmarda.
Setæ nine or more in number on each ring, in regular longitudinal series. *Hypogæon*, Savigny.

No setæ on each dorsal line.
On each ring 20 setæ in four groups ..... *Echinodrilus*, gen. nov.
On each ring 8 setæ.
Receptac. semin. in advance of deferent canals.
No lateral vessels to cæca.
Cephalic lobe distinct, with a posterior prolongation entering more or less the first setigerous ring *Lumbricus*, Linné.
Cephalic lobe distinct, no posterior prolongation. *Helodrilus*, Hoffmeister.
Cephalic lobe attached to the first setigerous ring. *Criodrilus*, Hoffmeister.
Lateral vessels to cæca contractile .... *Enaxes*, Grube.
Receptac. semin. behind the deferent canals. *Trichodrilus*, Claparède.
On each ring 4 setæ ..... *Phreoryctes*, Hoffmeister.

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* *Echinodrilus multispinus*, Grube, is an exception; the setæ are here united 5 by 5; but its general characters are too much those of the true Lumbricina for it to be placed elsewhere.

† A genus little known, which had better perhaps be placed as "incertæ sedis."

Tribe II. Enchytræina.

Blood generally red; no pores on the dorsal line. *Pachydrilus*, Claparède.
Blood colourless; a pore on each segment of the dorsal line.
Enchytræus, Henle.

Family II. NAIDEA.

Tribe I. Naidea propria.

Dorsal setæ from the fifth to the thirteenth ring, cupuliform at extremity.
Heterochæta, Claparède.
Forked setæ at all the bundles, more or less at the ventral bundles.
Caudal prolongation simple.
Pair of penes, sharp, long, non-retractile .. *Stylodrilus*, Claparède.
No distinct penis.
Vascular lacunæ with contractile cæca.. *Lumbriculus*, Grube.
Vascular lacunæ, no contractile cæca.
All the setæ forked ..... *Clitellio*, Savigny.
Hair-like setæ on the upper bundles.
Vascular lacunæ dilating and contracting as far as the 8th ring or less ..... *Tubifex*, Lamarck.
No contractile vascular lacunæ.... *Nais*, Müller.
Caudal prolongation terminating by finger-like projections.
These numerous ..... *Dero*, Oken.
Two in number ..... *Aulophorus*, Schmarda.
Setæ all hair-like.
Digestive tube free, cylindrical, straight.... *Mesopachys*, Œrsted.
Digestive tube presenting dilatations, or spiral.
Æolosoma, Hemprich et Ehren.

Tribe II. Chætogastrina.

Setæ simply forked ..... *Chætogaster*, Baer.
Setæ presenting laterally at their extremities prolongations into comb-like teeth ..... *Ctenodrilus*, Claparède.

Perichæta posthuma, sp. n., Vaillant, *l. c.* p. 228, pl. 10. fig. 1–8, Java.

Enchytræus vermicularis, Henle. Ratzel, *l. c.*, gives a short account of the pharyngeal nervous system of this species; also of the development of the receptacula seminis, and of the structure of the salivary glands. The muscular tissue is described as transversely striated. This is a first essay by a pupil of Prof. Pagenstecher.

Enchytræus pagenstecheri, sp. n., Ratzel, *l. c.* p. 587, Taf. 42. fig. 21, on water-plants, Rhine, at Carlsruhe, and Tümpeln, Heidelberg.

Limnodrilus claparedianus, Ratzel, *l. c.* p. 590, Taf. 42. fig. 24, Carlsruhe.

Lumbricus agricola, Hoff. Ratzel and Warschawsky, *l. c.*, give an account of the development of this species.

ANNELIDA GEPHYREA.

Sipunculidæ.

New species :—

Sipunculus angasii, Baird, *l. c.* p. 80, pl. 9. fig. 1, Port Lincoln, South Australia; *S. deformis*, Baird, *l. c.* p. 80, pl. 9. fig. 2, Sir C. Hardy's Island, North Australia; *S. æneus*, Baird, *l. c.* 81, New Zealand; *S. eximio-clathratus*, Baird, *l. c.* p. 81, Philippine Islands.

Phascolosoma capsiforme, Baird, *l. c.* p. 83, pl. 9. fig. 3, Falklands; *P.* (*Phymosomum*) *grayi*, Baird, *l. c.* p. 88 = *Siphunculus tuberculatus*, Gray, 1828 (non Blainville, 1827); *P. jeffreysii*, Baird, *l. c.* p. 88, Spezzia; *P. fasciatum*, Baird, *l. c.* p. 89, Madeira; *P. placostegi*, Baird, *l. c.* p. 89, Cape of Good Hope; *P. nigriceps*, Baird, *l. c.* p. 90, pl. 11. figs. 1, 1*a*, West Indies; *P. æthiops*, Baird, *l. c.* p. 90, West Indies; *P. perlucens*, Baird, *l. c.* p. 90, pl. 10. figs. 2, 2*a*, Jamaica; *P. albo-lineatum*, Baird, *l. c.* p. 91, Philippine Islands; *P. lordi*, Baird, *l. c.* p. 92, Vancouver's Island, possibly a variety of *P. agassizii*, Kefer.; *P. planispinosum*, Baird, *l. c.* p. 93.

Phascolosoma semirugosum, Grube, *l. c.* p. 641, Taf. 8. fig. 3; *P. asperum*, Grube, *l. c.* p. 642, Taf. 8. fig. 1; *P. rüppelii*, Grube, *l. c.* p. 643, Taf. 8. fig. 2.

Aspidosiphon cumingii, Baird, *l. c.* p. 102, pl. 11. fig. 2, Philippines.

Phascolosoma (*Aspidosiphon*) *annulosum*, sp. n., Grube, *l. c.* p. 644, Taf. 8. fig. 4, Zanzibar; *P.* (*A.*) *elegans*? = *Sternaspis elegans*, Cham. et Eisenh. = *Loxosiphon elegans*, Diesing, figured and described by Grube, *l. c.* p. 645, Taf. 8. fig. 5.

Pseudaspidosiphon, g. n., Baird, *l. c.* p. 102. Corpus gracile, duabus opacitatibus, scutella simulantibus, instructum. Extremitas posterior conica, centrifuge radiata; extremitas anterior, scutello destituta, opaca. Cetera ut in *Aspidosiphone*. *P. clavatum* = *Sipunculus clavatus*, Blainville; *P. gracile*, sp. n., Baird, *l. c.* p. 103, pl. 10. figs. 1, 1 *a*, Philippines.

Themiste lageniformis, Baird, *l. c.* p. 98, pl. 10. figs. 3, 3*c*, ? Australia.

Priapulidæ.

Priapulus tuberculato-spinosus, sp. n., Baird, *l. c.* p. 106, pl. 11. fig. 3, Falklands.

Baird (*l. c.* p. 108, footnote) states that he retains the genus *Sternaspis* amongst the Gephyrea, as, in outward form at least, it seems to be more nearly allied to this group than to the true Annelids.

Phoronis hippocrepia, St. Wright. Kowalevsky has published a treatise on the anatomy and development of this form. This memoir is printed in the Russian tongue, and we have been quite unable to obtain a copy of it. In a footnote to page 5 of the same author's memoir "On the development of simple Ascidia," he mentions that the alimentary canal in *Phoronis* is built up just as is indicated among the Ascidia, that from its first pushing in of itself (Einstulpung) there appears an opening, which is the *anus*, and that after this the oral opening makes its appearance.

The *Phoronis* is nothing else but the *Sipunculus*-form from which, according to Schneider, Krohn, and Claparède, *Actinotrocha* is derived.

In a footnote to the Annelids of the Gulf of Naples, Claparède alludes to this discovery, *l. c.* p. 409.

SCOLECIDA

BY

E. Perceval Wright, M.A., M.D., F.L.S.

A. *Separate Publication.*

Leuckart, R. Die menschlichen Parasiten, und die von ihnen herrührenden Krankheiten. Ein Hand- und Lehrbuch für Naturforscher und Aerzte. Leipzig und Heidelberg. 8vo. Zweiter Band, 2. Lieferung, pp. 257–512, mit 124 Holzschnitten.

This second portion of vol. ii. of Professor Leuckart's work on Human Parasites contains an account of *Ascaris mystax*, *Oxyuris vermicularis*, *Eustrongylus gigas*, *Strongylus longevaginatus*, *S. duodenalis*, and *Trichocephalus dispar*.

B. *Papers published in Journals &c.*

Baillet, M. C. Histoire Naturelle des Helminthes des principaux Mammifères Domestiques. Paris, 1866, pp. 1–172. (Extrait du Nouveau Dictionnaire de Médecine, de Chirurgie, et d'Hygiène vétérinaires.)

Gives a useful résumé of what is known about the Helminthoid Worms infesting our domestic cattle.

Baird, W. Description of a new species of *Ascaris* found in the stomach of a Walrus. Proc. Zool. Soc. 1868, p. 67.

——. Description of a new species of *Sclerostoma* from the stomach of the African Elephant (*Loxodonta africana*). Ibid. pp. 262–264.

Beneden, Ed. van. Sur un Scolex cestoïde trouvé chez un Dauphin. Comp. Rend. lxvii. p. 1051 : November 1868.

Colin, G. Etudes expérimentales sur les Trichines et la trichinose dans leurs rapports avec la zoologie, l hygiène et la pathologie. Comp. Rend. lxvi. pp. 1127–1131 : June 1868.

Feuereisen, J. Beitrag zur Kenntniss der Tænien. Zeitschr. f. wissensch. Zool. xviii. 1868, pp. 161–205, Taf. x.

Gives a full account of *Tænia setigera*, Fröh., and *T. fasciata*, Rudolphi, found in the common domestic goose.

Grenacher, H. Zur Anatomie der Gattung *Gordius*. Zeitschr. f. wissensch. Zool. xviii. 1868, pp. 322–344, Taf. 23 & 24.

The author gives an account of the anatomy of a new species of *Gordius*, and contrasts this genus with *Mermis*.

Grube, Ed. Ueber Landplanarien. 45er Jahresbericht d. schles. Gesell. f. vater. Cultur, Breslau, 1868, pp. 45–46.

Heijenbergh, H. Jr. Notice sur le *Filaroides mustelarum*, V. Ben. Archives Néerlandaises, tom. iii. 1868, 5me livraison, pp. 428–434, pl. 16.

Keferstein, W. Beiträge zur Anatomie und Entwickelungsgeschichte einiger See-Planarien von St. Malo. Abhand. d. k. Gesellschaft d. Wissens. zu Göttingen, Bd. xiv. 4to, 1868; separate reprint pp. 1–38, Taf. 1–3.

Describes *Leptoplana tremellaris*, O. F. M., *Eurylepta argus*, Stimps., and *E. cornuta*, O. F. M.

——. Ueber eine Zwitternemertine (*Borlasia hermaphroditica*) von St. Malo. Archiv f. Naturg. Bd. xxxiv. 1868, pp. 102–105, Taf. 3.

Krabbe, H. Trappens Bændelorme. Videnskabelige Meddelelser fra Naturhist. For. Kjöbenhavn, 1867, pp. 122–126.

Describes *Tænia villosa* and *Idiogenes otidis* from *Otis tarda*.

——. Helminthologiske undersogelser i Danmark og paa Island, med ærligt Hensyn til Blærcorm eidelserne paa Island. Vedensk. Selsk. Skr. 5. Række, 1868, 7. Bd. pp. 347–408, tab. 1–7.

Leuckart, R. Sur le développement des Nématodes. Bull. Acad. R. des Sciences de Belgique, 2e sér. lxxi. pp. 208–215, and 1 plate.

Lubbock, Sir J. Note on the Discovery of *Planaria terrestris* in England. Journ. Linn. Soc. 1868, vol. x. pp. 193–195.

M'Intosh, W. C. Note on the development of lost parts in the Nemerteans. Journ. Linnean Soc. vol. x. no. 44 (Nov. 26, 1868), pp. 251 254, pl. 7.

——. On the Structure of the British Nemerteans, and on some New British Annelids. (Short abstract, no list of species quoted.) Proc. Roy. Soc. Edin. vol. vi. p. 379 (Session 1867–68).

Ratzel, F. Zur Entwickelungsgeschichte der Cestoden. Archiv f. Naturg. Bd. xxxiv. 1868, pp. 138–149, Taf. 4.

Ratzel, F. Beschreibung einiger neuen Parasiten. Ibid. pp. 150–156, Taf. 4.

Sangale, G. Dell' echinococco del fegato. Mem. del R. Istit. Lombardo, vol. xi. fasc. i. 1868, pp. 1–12.

Schneider, A. Ueber Bau und Entwickelung von *Polygordius*. Reichert u. Bois-Reymond's Archiv, 1868 (Februar), pp. 51–60, tab. 2 & 3.

——. Ueber den Bau der Acanthocephalen. Ibid. (November) pp. 584–597.

Wyman, J. On a Thread-worm (*Filaria anhingæ*) infesting the brain of the Snake-bird (*Plotus anhinga*, L.). Proc. Bost. Soc. Nat. Hist. vol. xii. (Oct. 1868), pp. 100–104, woodcuts.

Cestoidea.

Tænia. Feuereisen (*l. c.*) undertook the investigation of the *Tænia* frequenting the common goose. Diesing gives five species as lodgers in the intestinal tract of this bird—*Tænia setigera*, *T. sinuosa*, *T. fasciata*, *T. lanceolata*, and *T. malleus*. Of these, *T. malleus* was not met with, and only one example of *T. lanceolata*. *T. sinuosa* is very difficult to distinguish from *T. setigera*, and may have been passed over as this species. *T. fasciata* and *T. setigera* were commonly met with; the former resided in the upper portion, the latter in the lower portion of the intestines. Very full anatomical details are given of these species.

Tænia villosa, Bloch, is described by Krabbe, *l. c.*, and figured; a figure is also given of the joints of *Tænia infundibuliformis*, from *Otis tarda*, in Rudolphi's collection.

Idiogenes, g. n., Krabbe, *l. c.* p. 126. Head apparently wanting, but anterior region (first six or seven joints) furnished with finger-like processes; number of joints from 30 to 100; 20 to 30 millims. in length. *I. otides*, sp. n., Krabbe, *l. c.* p. 126, from *Otis tarda* (figured).

Krabbe, *l. c.*, describes the following new species:—*Bothriocephalus fuscus*, *l. c.* p. 372; *B. lanceolatus*, p. 378, in *Phoca barbata*; *B. elegans*, *l. c.* p. 378; *B. variabilis*, *l. c.* p. 378, in *P. barbata*; *B. fasciatus*, *l. c.* p. 379, in *P. hispida*; *B. similis*, *l. c.* p. 379.

Caryophyllæus appendiculatus, sp. n., Ratzel, *l. c.* p. 138, Taf. 4. fig. 1, from *Tubifex rivulorum*.

Cysticercus lumbriculi, sp. n., Ratzel, *l. c.* p. 147, Taf. 4. figs. 5–7, from *Lumbricus variegatus*, Grube.

Trematoda*.

Monostoma isabellinum, sp. n., Ratzel, *l. c.* p. 153, found in the inner portion of the skull of *Gadus æglefinus*, Linn.

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* By an oversight in the arrangement of the MS., the references to the papers on Trichinæ were placed under the section of the Trematodes instead of the Nematodes in the 'Zoological Record' for 1867.

Acanthocephala.

Schneider (*l. c.*) gives an account of the anatomy of this Order, selecting chiefly *Echinorhynchus gigas* for description.

Nematoidea.

Heterakis perarmata, sp. n., Ratzel, *l. c.* p. 150, Taf. 4. figs. 8–11, from *Tarsius spectrum*.

Ascaris bicolor, sp. n., Baird, *l. c.* p. 71, figs. 1–5, stomach of a young male Walrus.

Filaria. A species is alluded to, but not sufficiently determined as new, from *Tarsius spectrum*, by Ratzel, *l. c.* p. 152.

Filaria anhingæ, sp. n., Wyman, *l. c.* p. 101, figs. 1–7. This species was found in every instance coiled up on the back of the cerebellum of *Plotus anhinga*, just behind the cerebral lobes, and confined to the texture between the arachnoid and pia mater. The number varied from two to six or eight, or even more. The two sexes were always present, though not always in equal numbers. The parasites were not met with in any other portion of the brain or of the body.

Filaroides mustelarum, Van Beneden. Heijenbergh (*l. c.*) records the occurrence of this species in the cavity of the frontal sinus of a *Mustela erminea*. The frontal bone was denuded on one spot; and here, the periosteum being removed, an opening was found communicating with the frontal sinus. Fifteen specimens were found in the cavity; both males and females were met with, more of the latter than the former.

Gordius. Grenacher (*l. c.*) contrasts this genus as follows with *Mermis*:—

Mermis.	*Gordius*.
Vulva ventral.	Vulva terminal.
Ovary in the form of tubes, as in Nematodes. Oviduct placed as a continuation of the same.	Ovary appearing as a solid cellular rope-like organ. Oviduct placed on it sidewise.
A receptaculum seminis wanting, as in Nematodes.	A receptaculum seminis.
Male genital organ single, as in Nematodes in general, with spicules.	Male genital organ double, without spicules.
Side-shields present.	Side-shields wanting.

Gordius ornatus sp. n., Grenacher, *l. c.* p. 323, Taf. 23. fig. 1, from a *Mantis* of the Philippine Islands.

Polygordius lacteus and *P. purpureus*. Schneider (*l. c.*) describes these species in detail, and gives an account of their development, which has been traced by him from the larval stage of Lovén upwards. From the development, no doubt remains that this genus belongs to the Nemathelminthia, forming a special family of this Order.

Turbellaria.

Planaria terrestris, O. F. M., is recorded by Sir J. Lubbock as found in Kent. He also mentions that it has been found by Mr. Houghton in Shropshire.

Leptoplana tremellaris, O. F. M. Keferstein (*l. c.* p. 6) quotes as syno-

nyms *Polycelis lævigatus*, Quatr., and *Lept. flexilis*, Dalyell. He figures this species in Taf. 1. figs. 1–7, Taf. 2. figs. 6 & 7, and Taf. 3.

Eurylepta cornuta, O. F. M. Keferstein (*l. c.* p. 9) quotes as synonym *Proceros sanguinolentus*, Quatr. and W. Thomson. The species is figured on Taf. 2. figs. 2–5, and Taf. 1. fig. 9.

A water-vascular system was not detected by Keferstein in the species of Sea Planaria examined.

Borlasia octoculata, Johnst. M'Intosh, in a paper on the structure of the British Nemerteans (as yet only published in abstract), has described the reproduction of the proboscis, the growth of an amputated anterior end (often consisting of little more than a head) into a perfect body and tail; and the remarkable tenacity of life enjoyed by many of the dissevered fragments of the body, which survive for months, and elaborate the generative elements in their interior; but since these remarks were made, it has been found that in *B. octoculata* each of the numerous fragments into which its lengthened and fragile body breaks becomes a perfect animal.

Borlasia hermaphroditica, sp. n., Keferstein, *l. c.* p. 103, Taf. 3. figs. 1 & 2, St. Malo.

Kerferstein's note on an hermaphrodite Nemertian (*B. hermaphroditica*) from St. Malo is translated in Ann. & Mag. Nat. Hist. 1868, vol. i. p. 229.

ECHINODERMATA

BY

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A. *Separate Publications.*

Sars, M. Mémoires pour servir à la connaissance des Crinoïdes vivants (Programme de l'Université royale de Norvége). 4to. Christiania, 1868, 6 plates, pp. 1–65.

Part i. pp. 1–46. Du *Rhizocrinus lofotensis*, nouveau genre vivant des Crinoïdes pédicellés, dits lis de mer (pls. 1–4).

Part ii. pp. 47–65. Du Pentacrinoïde de l'*Antedon sarsii* (pls. 5 & 6).

In the first part of this memoir Prof. Sars describes a remarkable new genus of Lily-star, the description of which will be found in the special part of this Record. In the second part he gives some details as to the development of *Antedon sarsii*, contrasting it with that of *Antedon rosaceus* previously investigated by Prof. Wyville Thomson.

Semper, C. Reisen im Archipel der Philippinen. Zweiter Theil. Wissenschaftliche Resultate. Erster Band. Holothurien. 4to, Hefte iv. and v. (Schluss des ersten Bandes), pp. 101–288, with 15 plates (40 in all), of which 6 are coloured. Leipzig, 1868.

These are the last parts of this valuable monograph of the Philippine Holothuroids. The annotated list of all the known species, the chapters on the anatomy of the class, and on the geographical distribution of the species, given in this volume, render this work almost a monograph. About 272 species are fairly established. In Selenka's list, even allowing for synonyms, there were but 212. The wonderful genus *Rhopalodina*, Gray, type of a new subclass of Echinodermata, is figured, and its anatomy given, in a supplement. Zoologists trust that the rest of the Echinoderms of the Philippine Islands may soon be monographed in like manner by Dr. Semper. The plates (of which the coloured ones are by Madame Semper) are very beautiful, and of great scientific accuracy.

B. *Papers published in Journals, &c.*

Grube, E. Ueber einen lebendig gebärenden Seeigel. Monatsber. Akad. Wiss. Berl. 1868, pp. 178–180. Translated in Ann. & Mag. Nat. Hist. ii. 1868, pp. 168–170.

——. Ueber *Asthenosoma varium* und zwei neüe Arten von *Salmacis*. 45ter Jahres-Bericht d. schles. Gesell. f. vat. Cult. Breslau, 1868, pp. 42–44.

——. Ueber einige seltenere oder neue Ophiuriden. Ibid. p. 44.

Heller, C. Die Zoophyten und Echinodermaten des Adriatischen Meeres. Wien, 1868, 8vo, pp. 1–88, Taf. 3.

Kowalevsky, A. Beiträge zur Entwickelungsgeschichte der Holothurien. Mém. de l'Acad. Imp. des Sciences de St. Pétersbourg, 7e série, tome xi. no 6, 1867, pp. 1–8, Taf. 1.

In this memoir the author gives an account of the development of several species of Holothuria.

Lovén, S. Om *Hyponome sarsi*. Förh. ved de Skandin. Naturforsk. tiende Möde i Christiania, July 1868, pp. .

Martens, E. von. Ueber vier neue Schlangensterne (Ophiuren) des Kgl. zoologischen Museums. Berlin. Monatsbericht, June 1867, pp. 345–348.

——. Ueber eine neue zwischen den Ophiuren und Euryalen die Mitte haltende Gattung von Seesternen, *Hemieuryale*. Ibid. pp. 481–486.

Pomel, A. Observations sur la classification des Echinides pour servir d'introduction à la description des Echinodermes fossiles tertiaires de l'Algérie occidentale. Compt. Rend. lxvii. pp. 302–305 : August 1868.

Pourtales, L. F. de. Contributions to the Fauna of the Gulf-Stream at great depths. Bulletin of the Museum of Comparative Zoology, Harvard College, Cambridge, Mas. Nos. 6 and 7. 1st contribution dated Dec. 26, 1867; 2nd contribution Dec. 8, 1868: pp. 103–142.

In these very interesting contributions, Count Pourtales describes many new genera and species of Invertebrates. These will be found referred to in the special portion of this Record.

Sars, M. Om Echinodermer og Cœlenterater fundne ved Lofoten. Vidensk.-Selsk. Forh. 1867, pp. 19–23.

Describes some new species of Holothurioids and of Hydrozoa taken at Skraaven.

Semper, C. *Ophiocrinus*, eine neue Comatuliden-Gattung. Archiv f. Naturg. xxxiv. 1868, pp. 68, 69.

Verrill, A. E. Notice of the Corals and Echinoderms collected by Prof. C. F. Hartt at the Abrolhos Reefs, province of Bahia, Brazil, in 1867. Trans. Connect. Academy, vol. i. 1868, pp. 351–371.

——. Notice of a collection of Echinoderms from La Paz, Lower California, with description of a new genus. Trans. Connect. Academy, vol. i. 1868, pp. 371–376, plate 4.

Geographical Distribution and Local Lists.

Mr. Hartt's collection of Echinoderms, made in 1867, on the coral-reefs of the coast of Brazil, was found to contain many species yet undescribed as occurring on that coast. Prof. Verrill (*l. c.*) publishes the following list of species:—

Antedon dubenii (?), Bolsche; *Ophiomyxa flaccida*, Lüt.; *Ophiactis krebsii*, Lüt.; *Ophionereis reticulata*, Say; *Ophiothrix violacea*, M. & T.; *Ophiolepis paucispina*, M. & T.; *Ophiura cinerea*, Lym.; *Oreaster gigas* (Linn.); *Linckia ornithopus*, Lüt.; *Echinaster crassispina*, Verrill; *Asterias atlantica*, Verrill; *Lytechinus variegatus*, A. Agas.; *Echinometra michelini*, Desor.; *Encope emarginatus* (Leske); *Thyone braziliensis*, Verrill; *Chirodota rotiferum*, Stimp.

Prof. Verrill (*l. c.*) enumerates the following as found at La Paz, Lower California:—

Ophiactis virescens, Lüt.; *Linckia unifascialis*, Gray; *Nidorellia armata*, Gray; *Amphiaster insignis*, gn. et spec. nov., Verrill; *Oreaster occidentalis*, Verrill; *Cidaris thouarsii*, Val.; *Echinometra van-brunti*, A. Ag.; *Tripneustes depressus*, A. Ag.; *Encope grandis*, Ag.; *Brissus obesus*, Verrill.

Anatomy and Physiology.

The fourth part of Semper's work, pp. 101–177, is completely taken up with notes on the anatomy of the subclass of the Holothurioids. It would be impossible here to give ever so slight an epitome of these seventy-six pages; but it may be useful to give the headings of the chapters in this section of this work. 1. On the alimentary system and accessory apparatus. 2. On the vascular system. [We must mention here the strange amœboid-like corpuscles met with by Semper in the circulatory fluid (Schleimzellen); they are figured on Taf. xxxiii. figs. 10, 12, 14. It is of great interest to compare these with the forms referred to and figured by Claparède, *vide antea*, p. 545.] 3. The water-vascular system. 4. The respiratory organs of the Aspidochirotæ and the organ of Cuvier. 5. The organs of generation. 6. The nervous system. 7. The muscular and locomotive system. 8. The inner skeleton. 9. The skin. [In a footnote Dr. Semper states that Prof. Grube mentioned to him that he has a sea-urchin from the China Sea with a quite soft skin: see special part, under Diademidæ.] Some chemical researches, by Dr. Hilger, are also given.

The fifth part contains a chapter on the systematic position of the Holothurioids (pp. 178–199).

Chapter V. is on the "manners and customs" of the subclass (pp. 200–202), and Chapter VI. on their geographical distribution (pp. 203–229).

Development.

Kowalevsky (*l. c.*) gives a somewhat detailed account of the development of *Psolinus brevis*, *Pentacta doliolum*, and *Phyllophorus urna*. Casting a general glance at the development of the Holothuriæ, it is to be noticed that all investigations hitherto, save those of Koren and Danielssen (*Holothuria tremula*), are somewhat superficial. The Auriculariæ, which were taken by Joh. Müller and Krohn for Holothuria-larvæ, have since turned out, from the later researches of Bauer, to be Synapta-larvæ. The development of the above species goes to show that all the Holothuriæ with a terminal mouth-opening undergo no very particular metamorphosis. On the other hand, researches made on some ova of those with a central mouth-opening, show that these have a very different development, and one far more after the type of that described by Joh. Müller in his Archives for 1856. But whether even these, though they certainly are developed on a different plan from the others, undergo a true metamorphosis, must be determined by yet future research.

Classification.

We endeavour to give Pomel's arrangement of the Echinoidea in a tabular form as follows:—

Fam. I. Spatangidæ, with six subfamilies:—

1. *Eupatagineæ. Eupatagus, Breynia, Trachyspatagus.*
2. *Brissineæ. Leskia, Brissus, Brissopsis.*
3. *Micrasterineæ. Micrasterias.*
4. *Toxasterineæ. Toxasterias.*
5. *Holasterineæ. Holaster, Metaporinus.*
6. *Ananchytineæ. Offaster, Stenonia.*

Fam. II. Lampadiformidæ, with four subfamilies:—

1. *Echinoneineæ.* a. *Echinoneus, Pyrina.* b. *Dysaster, Hyboclypus.* c. *Caratomes, Asterostoma, Pygaulus.*
2. *Cassidulineæ. Pygurus, Echinanthus, Faujasia.*
3. *Clypeasterineæ. Clypeaster, Scutella, Laganum.*
4. *Echinoconineæ. Echinoconus, Echinocyamus, Pygaster, Echinoclypus.*

Fam. III. Globiformidæ, with four subfamilies:—

1. *Cidarineæ. Cidaris, Orthocidaris.*
2. *Echininæ. Æropeltis, Salmacis, Tripneustes,* &c. &c.
3. *Diademineæ. Heterocidaris, Hemicidaris, Diadema, Pedina.*
4. *Saleninæ. Salenia.*

(*Vide* Pomel's 'Observations sur la classification des Echinides').

Cystidea.

Hyponome sarsi, gen. et spec. nov., Lovén, *l. c.* p. . Its general appearance is that of a small starfish or Euryalid; disk convex ventrally, flattened dorsally; rays 5, short, broad, each divided into two short dichotomous branches, ending in four very short rounded lobes; channels on disk forming tunnel-like passages leading to a mouth; a proboscis-like funnel, interradial and ventral. No pinnulæ. Ventral surface covered with small thick-set, irregular scales; rosette-arranged scales on dorsal surface. No trace of a calyx. In centre of disk a pentagonal space, studded with minute pores.

Among the Cystideans this genus recalls the genus *Agelacrinites* of Vanuxem, by the depressed form of the body, the scaly covering, and the flatness of the dorsal surface, devoid of anything like a stem or peduncle, as also by the absence of pectinated rhombs and of pinnulæ.

Hyponome shares with the surviving type of the Crinoidea the radiated form of the body and the simply conical unprotected funnel, and differs from the palæozoic crinoids by the absence of a calyx. Cape York, Torres Straits.

Crinoidea.

Rhizocrinus, nov. gen., Sars, *l. c.* p. 38. *Columna* articulata, longa, tenuis, canali centrali angulato perforata, apice incrassato obconico uniarticulato, extremitate inferiore nec dilatatâ nec adnatâ. Articuli elongati, teretes, superiores subcylindrici, ceteri medio magis minusve constricti extremitatibus tumidis et alternatim paulo compressis ita, ut axis longior faciei glenoidalis extremitatis inferioris cujusque articuli cum eodem extremitatis superioris angulum formet obliquum. Facies glenoidalis horum articulorum subelliptica, striis radialibus nullis, lineâ ornata eminente (cristâ articulari) utrinque dentatâ secundum axem longiorem extensâ et excavationibus duabus rotundatis, medio confluentibus, secundum axem breviorem extensis. *Cirri* filiformes, cylindrici, articulati et velut articuli columnæ calcarei, canali centrali circulari permeati, dichotomo-ramosi, basi crassiores sensimque apicem versus maxime attenuati. Hi cirri in numero vario, semper autem continuo, articulorum inferiorum columnæ obvii, e duobus punctis oppositis, in parte superiore tumidâ cujusque articuli paululum infra extremitates lineæ glenoidalis sitis et cum iisdem articuli proximi regulariter alternantibus, prodeunt singuli (interdum duo, fortasse pro ramis unius cirri basi bipartiti habendi), libere extrorsum porrecti et denique apice (sæpissime in discum irregularem expanso, de cujus peripheriâ filicula brevissima repentia exeunt) alienis corporibus adnati. Extremitas libera articuli infimi columnæ semper plures cirros emittit. *Calyx* apicem dilatatum columnæ crassitudine æquans, e numero radiorum compositus miro modo variabili, sæpissime quidem 5, haud rarò autem 4 aut 6, rarissime 7. Basalia extus inconspicua (forsan rudimentaria et intus in spatio centrali annuli adhæsione radialium infimorum formati relicto sita, cum his et inter se connata). Radialia infima (prima) pari modo extus haud visibilia, subtriangularia, cum columnâ et inter se connata. Radiale secundum et tertium libera, sat magna, elongata, compressa, subtetragona, secundum cum primo verâ articulatione (musculis duobus), cum tertio suturâ (absque musculis) conjunctum. Radiale tertium non axillare. Radii calycis scilicet non sunt divisi et quisque radius in brachium simplex continuatur; numerus brachiorum itaque velut radiorum

sæpissime 5, rarius 4 aut 6, rarissime 7. *Brachia* brevia, apicem versus parum attenuata, ex articulis (brachialibus) haud numerosis composita, sectione transversâ semilunaribus, fere æque longis ac latis, subsymmetricis, margine latero-ventrali rotundato, non in processus elongato. Quodque brachiale alterâ suâ extremitate articulatione verâ (musculis duobus), alterâ suturâ (syzygio) cum articulo proximo conjunctum, itaque facies glenoidales musculis præditæ cum iis musculis destitutis per totam longitudinem brachii regulariter alternantes. *Pinnulæ* ex articulis brachii epizygalibus (duobus primis exceptis) alternatim dextrorsum et sinistrorsum prodeuntes, lineares, apicem versus parum vel fere prorsus non attenuatæ, in medio brachii longiores, ex articulis haud numerosis compositæ. *Sulcus tentacularis* disci brachiorum pinnularumque *laminis calcareis* (e trabeculis reticulatis compositis) marginatus sat magnis, ovalibus, basi affixis, ceteroquin liberis et mobilibus, oblique transversaliter positis, utrinque seriem longitudinalem cum oppositâ alternantem formantibus et tentacula retracta obtegentibus; vesiculæ globosæ coloratæ (velut in *Antedone* obviæ) plane absunt. *Os* circulare in centro disci, circulo tentaculorum cinctum—duorum radialium ad originem cujusque sulci tentacularis et duorum interradialium intus ad quemque angulum oralem. Tentacula hæc radialia, sicut ea sulcos ventrales disci brachiorumque occupantia, longe exstensilia, tenuia, cylindrica, papillis cylindricis brevibus tenuissimis obsita, spicula calcarea irregulariter reticulata in cute continentia; interradialia illis breviora, flexilia, sed ut videtur parum extensilia, papillis similibus, sed densioribus, obsita, cute spiculis calcareis destitutâ. *Anguli orales* (*i. e.* anguli centrales arearum interradialium disci) laminæ prominentes, erectiles seu quasi valvulæ sese aperientes et occludentes, lingulatæ, calcareæ, e trabeculis compositæ reticulatis. Etiam cutis mollis disci repleta est laminis sparsis calcareis similiter reticulatis, sed multo minoribus, suborbicularibus aut irregularibus et male circumscriptis. *Anus* apertura circularis areæ interradialis medio fere inter os et peripheriam disci non tubulosa, margine simplici (haud crenulato). *Genitalia* in pinnulis brachiorum inferioribus velut in *Antedone* intumescentibus inclusa.

Rhizocrinus lofotensis, Sars, spec. nov., *l. c.* p. 39, pls. 1 to 4. Specimina 75 visa, maximum circiter 80^{mm} longum. Columna 12–70^{mm} longa, ex articulis 22–67 composita. Cirri in articulis columnæ 3–32. infimis obvii, maximi 8–9^{mm} longi. Brachia in maximis 11^{mm} longa, articulis 28–36; pinnulis utrinque 6–7 (raro 7–8), 3^{mm} longis, articulis 11–12, raro usque ad 15. Color animalis pallide fusco-cinereus aut cinereo-albidus.

Habitat gregatim ad insulas Lofoten (68° 11–15′ lat. bor.) profunditate 100–300 orgyarum, nec non in Sinu Nidarosiensi (63° 35′) ubi specimen mortuum in profunditate 80 orgyarum inventum est.

It is probable that this is the species described by Pourtales (*l. c.* p. 128) as *Bourgueticrinus hotessieri*, D'Orb. D'Orbigny's specimens were from the recent breccia of Guadaloupe, the same which contained the well-known human specimen now in the British Museum. Count Pourtales's specimens were obtained from depths of 237–248 and 306 fathoms, off the Samboes and off Sand Key, on a bottom of *Globigerinæ* and other deep-sea Foraminifera.

Ophiocrinus, gen. nov., Semper, *l. c.* p. 68. Five wholly undivided arms, springing directly from the central boss. Cirri ventral, sixteen, in a single row; cirri-joints 18–20; with the exception of the central boss there are no other ossicula. Length of arms 80 millims., cirri 9 millims., diameter of

central boss 2 millims.; disk ——? (it was wanting in the only specimen found). *O. indivisus*, sp. n., Semper, *l. c.* p. 68, Pandanon, near Bohol, Philippines, at a depth of 30 fathoms.

Comatula (*Alecto*) *hagenii*, sp. n., Pourtales, *l. c.* p. 111, off Sand Key, 100 fathoms; *C.* (*Antedon*) *brevipinna*, sp. n., Pourtales, *l. c.* p. 111, off Havana, 270 fathoms.

Antedon sarsii. Sars (*l. c.*) describes the pentacrinoid stage of this species; the early stages of development had been observed in 1864, but appear not to differ in any material respect from those described in *A. rosacea* by Wyville Thomson.

Ophiuroidea.

Ophiolepis adspersa, sp. n., Grube, *l. c.* p. 44.

Amphiura planispina, sp. n., Martens, *l. c.* p. 347, Rio Janeiro.

Ophiocoma ocellata, sp. n., Martens, *l. c.* p. 345, Cape York.

Ophiothrix roseo-cærulans, sp. n., *O. melanosticta*, sp. n., *O. striolata*, sp. n., Grube, *l. c.* p. 45; the first from St. Helena, and all three from the Chinese Sea.—*Ophiothrix purpurea*, sp. n., Martens, *l. c.* p. 346, Amboina; *O. viridi-alba*, sp. n., Martens, *l. c.* p. 347, Chinese Seas.

Hemieuryale, g. n., Martens, *l. c.* p. 484. Arms prehensile, single. Dorsal surface of the disk and the arms granular, without shields. Sides of the arms bordered by a row of large protuberances; the undersides of the arms with shields, and outside of these oblique rows of short teeth. No special madreporic tubercle. Two genital splits on the under surface by the side of the oral shields. The oral margins beset with papillæ. No true teeth. It will be seen that in this remarkable genus, while the arms are prehensile, as in *Euryale*, the under surface of the arms is provided with *Ophiura*-like shields. *H. pustulata*, sp. n., Martens, *l. c.* p. 484, figs 2, *a* & *b*, West Indies.

Astrophyton lævipelle, sp. n., Grube, *l. c.* p. 44; perhaps only a variety of *A. asperum*. The West Indies.

Asteroidea.

Asterias atlantica, sp. n., Verrill, *l. c.* p. 368. One specimen with eight rays from the Abrolhos reefs; another with six rays from Bermuda.

Pentaceros (*Nidorellia*) *armatus*, Gray. Verrill (*l. c.* p. 372) gives the following synonymy:—*Oreaster armatus*, Müll. & Tros.; *O. conifer*, Möbius; *Goniodiscus armatus*, Lüt.; *Nidorellia armata*, Verrill; *Goniodiscus stella*, Verrill (young).

Echinaster (*Othilia*) *crassispina*, sp. n., Verrill, *l. c.* p. 368, pl. 4. fig. 7, Bahia, Brazil.

Amphiaster, g. n., Verrill, *l. c.* p. 372. Disk moderately developed, flat above and below, with five broad triangular rays and two well-developed series of marginal plates. Skeleton of the upperside formed by regular, polygonal, spine-bearing tessellated plates, with pores between them; on the lower side composed of smaller granulated plates, each bearing a tubercle. Marginal plates granulated around the margin, smooth at centre or bearing a large smooth spine. Interambulacral plates bearing a row of smaller, inner spines, several on each plate, and an outer series of larger ones, one to each plate. This genus differs from *Oreaster* in its depressed form, tessellated polygonal plates, character of spines; from *Nidorellia* in the larger and less

numerous plates of the upper surface, in the marginal plates being granulated only around the margin. *A. insignis*, sp. n., Verrill, *l. c.* p. 373, pl. 4. fig. 10, La Paz, Lower California.

ECHINOIDEA.

Cidaridæ.

Cidaris annulosa was met with by Pourtales (*l. c.* p. 119) at a depth of 270 fathoms.

Diadematidæ.

Asthenosoma varium, gen. et sp. n., Grube, *l. c.* p. 44. In this genus the corona is flexible ($4\frac{3}{4}$ inches in diameter, 1 inch in height). In all known sea-urchins calcareous particles are secreted by the skin, and these assume the form of polygonal plates. Though these plates sometimes remain very thin, yet they are directly applied to one another, and unite with one another to form a firm corona embracing the viscera. In *Asthenosoma*, however, the soft portion of the skin plays a greater part by constituting the boundaries of the larger connexions of the plates, or, in some cases, between each individual plate, bestowing thereby a remarkable flexibility, which is so great that when one places the sea-urchin on its edge all its orbicular body becomes crumpled up. In general *Asthenosoma* foreshadows the so-called *Regularia* in the possession of teeth, in the mouth being situated in the middle of the under surface, in the anal orifice on the dorsal surface, as well as in the arrangement of the feet and the disposition of the spines; but it is noteworthy that the needle-shaped spines which cover all the dorsal surface, and are hollow, are covered by the tegument, and those on the ventral surface are very numerous and naked, sometimes spatula-shaped (around the mouth), sometimes of very considerable length ($\frac{4}{5}$ of an inch), slightly bent, and becoming gradually club-shaped; these latter, also hollow, are often widened out into a funnel-shape. The anal opening is slightly excentric and is surrounded by only four genital plates, of which one, the near one, bifurcates. Only three genital openings were found (perhaps an abnormality of the single specimen), whereas there are four smaller openings [ocular] between the genital plates; the madreporic tubercle lies on the hinder genital plate. The pedicellaria are very numerous and remarkably large; the large tubercles are distinctly pierced. The teeth broad on the ends and without a keel, and in form like an almost equilateral triangle broken at its apex. The specimen (preserved in spirit of wine) was of a variegated colour; the integument was stippled with rose-red and violet; the spatula and club-shaped spines near the mouth are light green; the dorsal spines white, with two or three violet-coloured bands, and the heads of the larger pedicellaria are greenish or brimstone-yellow. *A. varium*, Grube, Chinese Sea.

Echinidæ.

Tripneustes ventricosus was met with by Pourtales (*l. c.* p. 119) at a depth of 270 fathoms.

Tripneustes depressus (A. Ag.) is more fully described by Verrill, *l. c.* p. 375. It is very closely allied to *T. ventricosus*.

Salmacis rubrotinctus, sp. n., and *S. festivus*, sp. n., Grube, *l. c.* p. 43.

Echinus lividus. An abstract of a paper on the anatomy of this species by

Dr. Alcock, illustrated by a bad woodcut, appears in Proc. Lit. & Phil. Soc. Liverpool, vol. vi. 1867, pp. 25, 26. Dr. Alcock does not refer to Mr. Stewart's paper on the structure of Echinoderms, Proc. Zool. Soc. 1861, pp. 53–58.

Cassidulidæ.

Anochanus is the name of a new genus established by Dr. E. Grube for a little sea-urchin, closely resembling in external appearance *Nucleolites* (*Echinobrissus*) *epigonus*, Martens, but containing no genital openings or madreporic tubercle on the antambulacral surface; there is here, however, an orifice of considerable size, concealed by overlying spines, which leads into a sac not apparently communicating with the body-cavity, in which sac a number of small sea-urchins, provided with test-spines and feet, and of a diameter one-tenth that of the parent, were found. These young do not present any complete agreement with the parent, wanting the apical orifice and pit for the anus. [It is not stated whether the eye-plates are also absent in the large specimen examined, nor is it distinctly stated that the genital plates are absent in the young forms found in the sac above mentioned.] This form is believed to be from the Chinese Sea, and is provisionally called *A. sinensis*.

Palæostomidæ.

Leskia mirabilis, Gray. The name *Leskia* Dr. Gray proposes to change to *Palæostoma*, as that of *Leskia* is already in use for a genus of mosses, and for one of Diptera. As has been seen (Zool. Record, 1867, p. 652), Lovén proposes the name Palæostomata for the new section of Echinodermata to which *Leskia mirabilis* belongs. See a note by E. Billings, affixed to a reprint from the 'Geological Magazine' of Lütken's abstract of Lovén's paper, in the 'Canadian Naturalist' for December 1868, pp. 442–445, on the mouth of the Cystideans.

Holothurioidea.

Pneumonophora.

Aspidochirotidæ.

Holothuria natans, sp. n., Sars, *l. c.* p. 20, 250 to 300 fathoms, Skraaven.

Holothuria affinis, sp. n., Heller, *l. c.* p. 73, Taf. 3. fig. 7, Lesina.

Holothuria chilensis, sp. n., Semper, *l. c.* p. 249, Taf. 40. fig. 2, Chili; *H. discrepans*, sp. n., Semper, *l. c.* p. 251, Taf. 40. fig. 7, Samoa Islands; *H. inornata*, sp. n., Semper, *l. c.* p. 252, Taf. 40. fig. 1, Mazatlan.

Stichopus möbii, sp. n., Semper, *l. c.* p. 246, Taf. 40. fig. 11, West Indies.

The following differences are pointed out between some closely related species of this genus:—

C-formed bodies wanting.
- Large, single-pointed, stool-shaped bodies (Stühlchen) present ..... *S. godeffroyi*, Sem.
- Large, single-pointed, stool-shaped bodies (Stühlchen) wanting ..... *S. godeffroyi*, var. *pygmæus*.

C-formed bodies present.
- Large, single-pointed, stool-like bodies present.
  - Interradial dorsal papillæ numerous. *S. godeffroyi*, var. *b*.
  - Only four rows of radial dorsal papillæ. *S. horrens*, Selenka.
- Large, single-pointed, stool-like bodies wanting, and instead somewhat smaller, many-pointed, stool-like bodies ..... *S. variegatus*, Sem.

Dendrochirotidæ.

Orcula cucumiformis, sp. n., Semper, *l. c.* p. 244, Taf. 40. fig. 89, Cape York, Australia.

Thyonidium scabrum, sp. n., Sars, *l. c.* p. 19, 300 fathoms, off Skraaven, near *T. hyalinum* (*Cucumaria*), Forbes (= *T. pellucidum*, Düben & Koren, *non* Vahl).—*Thyonidium conchilegum*, sp. n., Pourtales, *l. c.* p. 128.

Thyonidium peruanum, Semp., = *T. molle*, Selen., Semper, *l. c.* p. 243.

Thyonidium chlersi, sp. n., Heller, *l. c.* p. 77, pl. 3. fig. 11, Lesina.

Pattalus peruvianus, Verrill, = *Anaperus peruanus*, Verrill. On dissection this proved to be a *Pattalus*, very near to *P. mollis*, Sel. [? *Thyonidium molle*, Sel.]. Verrill, *l. c.* p. 376.

Thyone inermis, sp. n., Heller, *l. c.* p. 78, pl. 3. fig. 12, Lesina.

Thyone (*Sclerodactyla*) *braziliensis*, sp. n., Verrill, *l. c.* p. 371, pl. 4. fig. 8 (oral plates), Abrolhos reefs.

Thyone (*Stolus*) *chilensis*, sp. n., Semper, *l. c.* p. 241, Taf. 40. figs. 3–6, Chili; *T.* (*S.*) *rosa*, sp. n., Semper.

Stolinus cataphractus, Sel., is quoted as a synonym of *Psolus cuvierius*, Jäger. Semper, *l. c.* pp. 240 & 272.

Cuvieria operculata, sp. n., Pourtales, *l. c.* p. 127, off Sand Key, 150 fathoms.

Colochirus tuberculosus, Quoy & Gaimard. Semper (*l. c.* pp. 239 & 271) gives the synonymy of this species as follows:—*C. quadrangularis*, Tros.; *Cercodemas anceps*, Selenk.; *Cucumaria pentagona*, Semp.; *Col. anceps*, Semp.; *C. quadrangularis*, Sel. (part.).

Colochirus quadrangularis, Lesson, = *Col. quadrangularis*, Sel. (part.).

Colochirus peruanus, sp. n., Semper, *l. c.* p. 239, Taf. 39. fig. 20, Peru.

Cucumaria californica, sp. n., Semper, *l. c.* p. 235, Taf. 39. fig. 16, Taf. 40. fig. 10, Mazatlan. Perhaps *C. frondosa* (Jäg.) of Stimpson, from California.—*C. japonica*, sp. n., Semper, *l. c.* p. 236, Taf. 39. figs. 2, 3, & 18, Japan.

Cucumaria pentactes (O. F. M.), Pennant. (The species recorded by Forbes under this name is *C. frondosa*.) Selenka records it as found in Norway; but Sars knows it not, and simply mentions that M'Andrew and Barrett have found it there. Semper adds that "die Bestimmungen dieser beiden Schleppnetzzoologen sind aber sehr wenig zuverlässig," and that it appears to him probable that *C. hyndmanni* or *C. elongata* was mistaken for it. This remark must apply only to the echinodermological knowledge of the "dredgers" referred to, the elder of whom never named an Echinoderm in his life; the younger is dead. Semper, *l. c.* p. 236.

Cucumaria hyndmanni, Thompson, as synonyms *C. korenii*, Lüt., and probably *C. calcigera*, Agass. (Stimps. ?). Semper, *l. c.* p. 237.

Cucumaria köllikeri, sp. n., Semper, *l. c.* p. 237, Sicily, very near *C. syracusana*, Grube; *C. dubiosa*, sp. n., Semper, *l. c.* p. 238, Peru.

Cucumaria kirchsbergii, sp. n., Heller, *l. c.* p. 75, Taf. 3. figs. 8–10, Lesina. Near *C. hyndmanni*.

Cucumaria frondosa, Gunner. Semper says that "Selenka's Arragonitnadeln sind mir ganz räthselhaft" (*l. c.* p. 234).

Molpadidæ.

Molpadia, char. emend., Semper, *l. c.* p. 233. Twelve to fifteen tentacles, fingered on the ends. Pharyngeal retractors and also the elongated radial portion of the calcareous rings, as in the Dendrochirotæ. As species, *M. chi-*

nensis, J. Müll., and *M. australis*, sp. n., Semper, *l. c.* p. 233, Australia. This species resembles *Haplodactyla* in the form of its body.

Echinosoma, Semper, = *Eupyrgus*, Lütken. The species described as *Ech. hispidum*, Semp., = *Eup. scaber*, Lüt.; but Lütken's *Eupyrgus*, sp. n., belongs not to this genus, is not identical with *Eup. hispidus*, Barrett, and belongs apparently to Sars's genus *Echinocucumis*. This necessitates the doing away with the family 2, Eupyrgidæ, from the Apneumona, as *Eupyrgus scaber*, Lüt., belongs to the Molpadidæ.

Apneumona.

Chirodota. Semper suspects (*l. c.* p. 231) that *C. tigillum* and *C. typica* of Selenka are only varieties of *C. pellucida* or *C. lævis*.

Synapta petersi, sp. n., Semper, *l. c.* Nachträge, p. 230, Amboina.

Synapta agassizii, Sel., is placed by Semper as a variety of *S. beselii*, Jäger. *L. c.* Nachträge, p. 230.

Synapta kefersteinii, Sel. Semper describes (*l. c.* p. 230) the biscuit-shaped bodies, quite overlooked before by both Selenka and himself.

Synapta godeffroyi, sp. n., Semper, *l. c.* p. 231, Samoa Island.

Synapta hispida, sp. n., Heller, *l. c.* p. 71, Taf. 3. figs. 5 & 6, Lesina. Near *S. digitata*, Mont.

Synapta inhærens and *S. sarniensis*. Ray Lankester mentions that an important distinctive character is to be met with in the miliary spicules, especially those of the tentacles of these species, those in *S. sarniensis* being simple, while those in *S. inhærens* are much branched. Quart. Journ. Micr. Science, vol. xvi. p. 54.

Diplostomoidea.

Rhopalodinidæ.

Rhopalodina lageniformis, Gray. Semper (*l. c.* p. 252) gives, as a supplement to his work on the Holothurioidea, a pretty full account of the anatomy of this remarkable creature, which he places in a separate division of the Echinodermata. The body is lageniform; in the hinder portion are ten ambulacra, and, corresponding to these internally, ten radiating muscles, ten ambulacral canals with ampullæ, and ten nerves; these ten rays are prolonged into the peduncle, but bear no feet; at the free extremity of the peduncle are the mouth and anal opening, *side by side*; the oral margin is entire; anal margin with ten papillæ. The pharynx and terminal portion of the intestine travel side by side in the interior of the peduncle. The stomach forms a spiral with numerous turns and a double loop. Of the ten rays, five correspond with the pharynx and five with the intestine. There is a calcareous pharyngeal ring formed of ten pieces, and a calcareous anal ring of like number.

In all living Echinoderms the anus is placed either opposite to the mouth in the centre of the radiate arrangement or in an interradium. In the Crinoidea tessellata there exist more than five rays placed round a single central aperture; but with this section *Rhopalodina* has little else in common.

CŒLENTERATA

BY

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Duthiers, L. Note sur le développement de l'œuf chez les Mollusques et les Zoophytes. Compt. Rend. lxvii. pp. 409–412 : August 1868.

Filippi, F. de. On a new genus and species of Hydrozoa. Mem. R. Acad. di Torino.

Gray, Dr. J. E. Descriptions of some new Genera and Species of Alcyonoid Corals in the British Museum. Ann. & Mag. Nat. Hist. vol. ii. 1868, pp. 441–445, woodcuts.

——. Note on a new Japanese Coral (*Isis gregorii*) and on *Hyalonema*. Ibid. pp. 263–264.

Heller, C. Die Zoophyten und Echinodermaten des Adriatischen Meeres. Wien, 1868, 8vo, pp. 1–88, Taf. 3.

The first part of this catalogue gives a list of the Cœlenterata, and the second part a list of the Echinodermata, of the Adriatic. 101 species of the former and 53 of the latter are recorded. This catalogue appeared in the 'Verhandlungen' of the Zoological and Botanical Society of Vienna.

Pourtales, L. F. de. Contributions to the Fauna of the Gulf-Stream at great depths. Bulletin Mus. Comp. Zool. Harvard College, Cambridge, Mass. (No. 6, Dec. 1867; No. 7, Dec. 1868), pp. 103–142.

Semper, C. Ueber die Entstehung der Corallenriffe. Verhandl. d. phys.-med. Ges. Würzburg (Sitzungsber.), 1868, 1. Band, 3. Heft, pp. vi–viii.

Verrill, A. E. Synopsis of the Polyps and Corals of the North-Pacific Exploring Expedition, under Commodore C. Ringgold and Capt. J. Rodgers, from 1853 to 1856. Collected by Dr. W. Stimpson. Part IV. Proc. Essex Institute, vol. v. Nov. and Dec. 1867, pp. 315–333, plate 3.

Part IV. continues Professor Verrill's descriptions of the Polyps and Corals collected by Dr. Stimpson, and treats of the Actinaria.

——. Review of the Corals and Polyps of the West Coast of America. Trans. Connecticut Acad. vol. i. pp. 377–422 (pp. 377–390, April 1868; pp. 391–398, June 1868; pp. 399–414, July 1868; and pp. 415–422, December 1868).

The Panaman fauna proves to be remarkably rich in Gorgonidæ; no less than 36 species are described from it; and attention is again called to the remarkable contrast that exists between the Polyp-faunæ of the Atlantic and Pacific coasts of Central America. Prof. Verrill had called attention in 1864 to the dimorphic forms of the polyps of *Renilla* as "rudimentary polyps."

——. Critical remarks on the Halcyonoid Polyps in the Museum of Yale College, with descriptions of new genera. American Journ. Sci. & Arts, vol. xiv. (May) 1868, pp. 411–415.

HYDROZOA.

Reproduction.—Haeckel states that in several species of the Thaumantiadæ of Gegenbaur he has divided the umbrella into a hundred pieces, and from each piece, providing only it contained a portion of the *margin* of the umbrella, grew in a few days (from two to four) a complete small Medusa. Merely a loosened shred of the fringe on which the base, the adjoining piece of the edge of the umbrella, remained, formed a Medusa in a few days. With other Hydro-Medusæ the result was even more suprising. Here he divided the globular, non-differentiated mass of cells from the ovarian furrows into several pieces, and yet from each was developed a perfect larval form. (Haeckel in Monograph of the Monera, Jenaische Zeitschrift für Med. u. Naturwiss. 1868, iv. p. 84.)

Corynidæ.

Halybotrys, gen. nov., De Filippi, *l. c.* p. 383, pl. 2. Polypary tubulous, erect, filiform, ramose, slightly complicated, with a few distantly placed branches. Polyps claviform, carried at the free extremity of the arms; tentacles capitate, numerous, widely distributed. Gonophore simple, not medu-

sæform, interspersed through the tentacles. *H. fusicola*, sp. n., De Filippi, *l. c.* p. 383, Mediterranean.

Tubulariidæ.

Tubularia crinus, sp. n., Pourtales, *l. c.* p. 119, off Sand Key, 100 fathoms.

Sertulariidæ.

Sertularia crassicaulis, sp. n., Heller, *l. c.* p. 34, Taf. 1. fig. 34, Dalmatian coast.

Plumularia octodonta, sp. n., Heller, *l. c.* p. 40, Taf. 2. fig. 3, Pirano, on stones and rocks; *P. kirchenpaueri*, sp. n., Heller, *l. c.* p. 40, Taf. 2. fig. 4, Pirano, Lesina.

Anisocalyx diaphanus, sp. n., Heller, *l. c.* p. 42, Taf. 2. fig. 5, Capocesto; *A. bifrons*, sp. n., Heller, *l. c.* p. 43, Taf. 2. fig. 6, Lesina; *A. pinnatifrons*, sp. n., Heller, *l. c.* p. 43, Taf. 2. figs. 7, 8, Lesina.

Heteropyxis. Heller (*l. c.* p. 44) establishes this genus for *Lowenia* (Meneghini, 1845), already in use among the Echinoderms. *H. disticha*, sp. n., Heller, *l. c.* p. 44, Taf. 2. figs. 9, 10, Lesina.

Antennularia triseriata, sp. n., Pourtales, *l. c.* p. 118, off Sand Key, 100 fathoms.

Thoa pulchella, sp. n., Pourtales, *l. c.* p. 118, *T. capillaris*, sp. n., Pourtales, *l. c.* p. 118, and *T. siphonata*, sp. n., Pourtales, *l. c.* p. 119, the two former off Sand Key, in 100 fathoms, the last off Havana, 270 fathoms.

Milleporidæ.

Millepora nitida, sp. n., Verrill, *l. c.* p. 362, Abrolhos Reefs; *M. braziliensis*, sp. n., Verrill, *l. c.* p. 363, Pernambuco, Brazil.

Pliobothrus, g. n., Pourtales, *l. c.* p. 141. Tissue more compact than in *Millepora*; larger pores scarcer, smooth, without any rudiments of septa; smaller pores tubulated; cœnenchyma with still finer linear pores. Form generally branching regularly. Differs from *Heliopora* by its tissue not being prismatic. *P. symmetricus*, sp. n., Pourtales, *l. c.* p. 141, off Florida Reef, not rare in from 100 to 200 fathoms.

Pliobothrus (*Heliopora*) *tubulata*, sp. n., Pourtales, *l. c.* p. 117, and *P.* (*H.*) *carinata*, sp. n., Pourtales, *l. c.* p. 118, off Havana, 270 fathoms.

Haplophyllia, g. n., Pourtales, *l. c.* p. 140. Corallum simple, fixed by a broad base, covered with a thick epitheca; columella styliform, strong (sometimes double ?), very thick at the base; interseptal chambers deep, uninterrupted by tabulæ or dissepiments. *H. paradoxa*, sp. n., Pourtales, *l. c.* p. 140, a single specimen dredged living in 324 fathoms off the Florida Reef. This singular Coral strikes one at first sight by its resemblance to some of the Rugosa.

ACTINOZOA.

Alcyonaria.

Alcyoniidæ.

Telesto trichostemma, V.,= *Gorgonia trichostemma*, Dana. An examination of the original specimens of this species shows that it is a parasitic polyp (probably a *Telesto*), allied to *Cornularia*, covering the lower part of the dead

axis of an *Antipathes*, but on the upper part rising up into slender, hollow branches of its own. Verrill, *l. c.* p. 415.

Sarcodictyon rugosum, sp. n., Pourtales, *l. c.* p. 113, off Havana, 270 fathoms.

Nephthya nigra, sp. n., Pourtales, *l. c.* p. 130, off Sand Key, 150 fathoms.

Lemnalia, g. n., Gray, *l. c.* p. 442. Coral soft, fleshy, formed of numerous clustered, small, cylindrical tubes; the outer surface is smooth, destitute of any appearance of spicules, but showing by grooves the places of union of the different tubes that form the mass, each tube ending in a polype. The base is broad, expanded horizontally, fleshy like the coral, throwing up several stems, which are irregularly branched, the lateral branches being somewhat two-rowed, the terminal branchlets rather clustered, each branchlet ending in a short cylindrical polype, the mouth and tentacles of which are completely retractile, only leaving a central knob surrounded by eight slightly depressed radiating grooves, and entirely destitute of any appearance of superficial spicules. The whole coral is flaccid, and the larger branches appear to be more or less compressed; but this may in great part depend on the state of the specimen. *L. jukesii*, sp. n., Gray, *l. c.* p. 442, fig. 1 (woodcut).

Cyathopodium tenue, Verrill, = *Aleopora tenuis*, Dana. This new genus is proposed for the remarkable polyp rightly described by Dana as near *Tubipora*. It is in fact a *Tubipora*-like polyp, with short cup-shaped tubes connected by narrow calcareous stolons, which correspond to the transverse plates of *Tubipora*, and from which the new buds arise. Verrill, *l. c.* p. 415.

Kölliker's note on the polymorphism of the Anthozoa and the structure of the Tubipora is translated in Ann. & Mag. Nat. Hist. vol. i. 1868, p. 227 (*vide* Zool. Record, 1867, p. 661).

Pennatulidæ.

Renilla amethystina, Verrill, described in full and figured. Verrill, *l. c.* p. 379, pl. 5. fig. 1.

Verrill mentions (*l. c.* p. 378) that he first called attention to the peculiar dimorphic forms met with among the polyps of *Renilla* in 1864. He at that time called them "rudimentary polyps," and since then he has described them as occurring in *Leioptillum undulatum*, *Ptilosarcus gurneyi*, *Veretillum stimpsoni*, &c.

Stylatula gracilis, Verrill, is described in detail and figured by Verrill, *l. c.* p. 382, pl. 5. fig. 2.

Gorgonidæ.

Primnoa trilepis, sp. n., Pourtales, *l. c.* p. 130, off Florida Reef, 324 fathoms.

Acis solitaria, sp. n., Pourtales, *l. c.* p. 132, 200 fathoms.

Gonigoria clavata, Gray, Proc. Zool. Soc. 1851, p. 124, is, according to Verrill, *l. c.* p. 411, a young *Muricea*.

Muricea albida, sp. n., Verrill, *l. c.* p. 411, Panama, included as a white var. of *M. robusta*, Verrill.—*M. purpurea*, sp. n., Verrill, *l. c.* p. 412, Panama, had been included as a purple var. of *M. robusta*, Verrill.—*M. nitida*, sp. n., Verrill, *l. c.* p. 412, Ebon Island, Central Pacific.—*M. flexuosa*, Verrill = *Lissogorgia flexuosa*, Verrill: Verrill, *l. c.* p. 412.

Muricea acervata, Verrill, is described and figured, Verrill, *l. c.* p. 419, pl. 7. fig. 5, pl. 8. fig. 1; also *M. hispida*, Verrill, p. 422, pl. 7. fig. 4, pl. 8. fig. 3.

M. tubigera, sp. n., Verrill, *l. c.* p. 421, pl. 7. fig. 7, pl. 8. fig. 2, Panama.

Anthogorgia, g. n., Verrill, *l. c.* p. 412, is proposed for *Muricea divaricata*, Verrill.

Paramuricea cancellata, V., = *Gorgonia cancellata*, Dana, = *Villogorgia nigrescens*, Duch. & M., = *Lissogorgia flabellum*, V., = *Paramuricea nigrescens*, Kölliker. The genus *Lissogorgia*, founded on *L. cancellata*, therefore drops. See Verrill, *l. c.* p. 412.

Gorgonia. Verrill states, *l. c.* p. 414, that all the 17 species of this genus, as restricted by Edwards, *i. e.* the 3rd section of Kölliker, are from the west coast of America. The Panama species fall into two groups—1. Cœnenchyma with double spindles, both long and short; 2. Cœnenchyma with both double spindles and double wheels. He proposes to establish these as subgenera, calling the first *Litigorgia*, the second *Eugorgia*. See also Verrill, Notes on Radiata, *l. c.* p. 386.

Litigorgia floræ, sp. n., Verrill, *l. c.* p. 387, pl. 5. fig. 3, pl. 6. fig. 1, Panama and Pearl Islands.—*L. agassizii*, V., = *Rhipidogorgia agassizii*, V., 1864, = *Gorgonia agassizi*, V. (pars), 1866, Verrill, *l. c.* p. 388, pl. 5. fig. 4; *L. media*, V., = *R. media*, V. 1864, = *G. media*, V. 1866, Verrill, *l. c.* p. 389. —*L. eximia*, sp. n., Verrill, *l. c.* p. 390, pl. 6. fig. 2, Pearl Islands.— *L. adamsii*, Verrill, *l. c.* p. 391, pl. 5. fig. 3, pl. 6. fig. 4, Panama = *Gorgonia agassizii* (pars), Verrill, 1864, = *Rhipidogorgia ventalina*, Duch. & Mich. 1864 (non *G. ventalina*, Linn., Pallas, Esper, &c. nec *R. ventalina*, Edw.); a variety, *L. adamsi*, var. *rutila*, is also described by Verrill, *l. c.* p. 392, pl. 6. fig. 5.—*L. stenobrachis*, V., = *Gor.* (*Eugorgia*) *stenobrachis*, V., = *Rhipidogorgia stenobrachis*, Val., Edw. & Haime, Verrill, *l. c.* p. 393; *L. ramulus*, V., = *G. ramulus*, Edw. & Haime, = *G. humilis*, V. (non Dana) = ? *Lophogorgia panamensis*, Duch. & Mich., Verrill, *l. c.* p. 394.—*L. pumila*, sp. n., Verrill, *l. c.* p. 396, pl. 5. fig. 8, Zorritos, Peru; *L. diffusa*, sp. n., Verrill, *l. c.* p. 397, pl. 5. fig. 6, pl. 6. fig. 3, Bay of Panama; *L. californica*, sp. n., Verrill, *l. c.* p. 398, Cape St. Lucas.—*L. exilis*, sp. n., Verrill, *l. c.* p. 400, pl. 5. fig. 11, Panama.—*L. lævis*, V., = *Gor. rigida*, var. *lævis*, V., 1866, = ? *Lophogorgia alba*, Duch. & Mich., Verrill, *l. c.* p. 398, pl. 5. fig. 7.—*L. fucosa*, V., = *Gor. fucosa*, Val., = *Plexaura fucosa*, Edw. & Haime, Verrill, *l. c.* p. 404.—*L. peruana*, Verrill, = ? *Plexaura reticulata*, Ehr., = *P. reticulata*, Philippi. Verrill, *l. c.* p. 405, gives this species a new name, because, 1, it is not the *Gor. reticulata*, Ellis; 2, it may not be the *P. reticulata*, Ehr.; 3, although "*reticulata*" might be a somewhat appropriate name for it if considered a *Plexaura*, it becomes very inappropriate when referred to a genus in which there are so many species that are actually reticulated throughout, while in this the reticulations are few, irregular, and often entirely absent.

The following species are referred by Verrill, *l. c.* p. 406, with doubt, to *Litigorgia*:—*Leptogorgia sanguinea*, Edw. & Haime; *Plexaura arbuscula*, Philippi; *P. rosea*, Phil. (non *Gor. rosea*, Lam.); *P. platyclados*, Phil.

Eugorgia ampla, V., = *Leptogorgia ampla*, V., Verrill, *l. c.* p. 407, pl. 5. fig. 12, pl. 5. fig. 6; *E. nobilis*, sp. n., Verrill, *l. c.* p. 408, pl. 5. fig. 13, Pearl Islands; *E. daniana*, sp. n., Verrill, *l. c.* p. 409, pl. 5. fig. 14, pl. 6. fig. 7, Panama; *E. rubens*, sp. n., Verrill, *l. c.* p. 411, Paita, Peru; *E. bradleyi*, sp. n., Verrill, *l. c.* p. 411, Panama.—*E. mexicana*, V., = *Lophogorgia aurantiacea*, Horn (non *Leptogorgia aurantiaca*, Edw.), Verrill, *l. c.* p. 413, pl. 5. fig. 15, pl. 6. fig. 8.

Gorgonia (*Pterogorgia*) *gracilis*, sp. n., Verrill, *l. c.* p. 359, and pl. 4. figs. 2 & 3 (spicules), Abrolhos Reefs.

Heteorogorgia, g. n., Verrill, *l. c.* p. 413. Horny axis; cœnenchyma smooth, with very small spindle-shaped spicules; cells verruciform, armed at the summit with longer, slender, projecting, and divergent sharp spicules, which are often much bent. *H. verrucosa*, sp. n., Verrill, *l. c.* p. 413, Panama; *H. tortuosa*, sp. n., Verrill, *l. c.* p. 413, Panama.

Psammogorgia, g. n., Verrill, *l. c.* p. 413, for *Echinogorgia arbuscula*, Ver. *Psammogorgia arbuscula*, Verrill, is described and figured by Verrill, *l. c.* p. 414, pl. 5. fig. 17, pl. 6. fig. 9; two varieties, *dowii* and *pallida*, are described.—*P. teres*, sp. n., Verrill, *l. c.* p. 416, pl. 5. fig. 18, pl. 7. fig. 1, Pearl Islands; *P. gracilis*, sp. n., Verrill, *l. c.* p. 417, pl. 5. fig. 19, pl. 6. fig. 10, Pearl Islands.

Astrogorgia, g. n., Verrill, *l. c.* p. 413, for *Muricea sinensis*, V.

Acanthogorgia aspera, sp. n., Pourtales, *l. c.* p. 113, off Havana, 270 fathoms; *A. hirta*, sp. n., Pourtales, *l. c.* p. 131, off Florida Reef, 324 fathoms.

Filigella, g. n., Gray, *l. c.* p. 443. Coral free, filiform, simple, slender, rather rigid. Bark thin, transparent, formed of a single series of flattened subfusiform, elongate spicules placed close together side by side, forming a hard coat; ends blunt, ovate, covered with spicules like the stem. The axis horn-like, slender, cylindrical. Polype-cells short, broad, conical, very far apart, those next each other being on different sides of the stem, forming a subspiral series covered with a single series of close spicules like the bark. The cells near each end of the coral are very much alike, and the ends of the coral very similar and covered with spicules; but there does not appear to be any opening for the polype: they are probably the buds by which the coral grows in length. *F. gracilis*, sp. n., Gray, *l. c.* p. 444, fig. 2 (woodcut), Cape Frio, near Rio de Janeiro.

Plexaura reticulata, Phil., is a *Gorgonia*, Köl., but the name *G. reticulata* is already in use; so Verrill, *l. c.* p. 414, proposes to call it *Gorgonia peruviana*.

Juncella extans, V. (Jan. 1864) = *J. flagellum*, Johnston (Aug. 1864), Verrill, *l. c.* p. 413.

Isis (?) *gregorii*, sp. n., Gray, *l. c.* p. 263, Inosima, Japan.

Isis flexibilis, sp. n., Pourtales, *l. c.* p. 132, off Florida Reef, 324 fathoms.

Isidella lofotensis, g. et sp. n., Sars, Vid. Selsk. Forh. 1867, p. 22, 300 fathoms, Skraaven.

Melithæaceæ.

Mopsea eburnea, sp. n., Pourtales, *l. c.* p. 132, off Sombrero Light, 517 fathoms.

Anicella, g. n., Gray, *l. c.* p. 445. Coral fan-like, dichotomously branched; branches separate, divaricating, in the same plane, arising from the short, rather sunken joints. Bark thin, hard, smooth, longitudinally grooved. Cells minute, subcylindrical, short, produced in a narrow alternating series on each edge of the branches and branchlets. Axis calcareous, solid, with longitudinal grooves; internodes very short, contracted, bark-like. This genus differs from *Melithæa* in the bark being smooth and the internodes not swollen, and from *Isis* in the internodes being bark-like and not cartilaginous. *A. australis*, sp. n., Gray, *l. c.* p. 445, fig. 4 (woodcut), Port Essington.

Acabaria, g. n., Gray, *l. c.* p. 444. Coral very slender, branched, dichotomous, expanded in a plane; branches and branchlets very slender, compressed, with short, swollen joints, more prominent on the older stems. Bark thin, hard, smooth. Cells short, broad, subcylindrical, truncated, in a single series on each side of the branches and branchlets, rather close together. Axis calcareous, solid, red, longitudinally grooved; internodes short, swollen, spongy. *A. divaricata*, sp. n., Gray, *l. c.* p. 445, fig. 3 (woodcut), Australia.

Fritz Müller's paper on *Balanus armatus* is translated in vol. i. of the Ann. & Mag. Nat. Hist. 1868, pp. 393–412. We refer to it here, as it contains a description of *Carijoa rupicola* (*vide* Zool. Record, 1867, p. 661).

ZOANTHARIA.

Malacodermata.

Halocampa stimpsonii, sp. n., Verrill, *l. c.* p. 319, pl. 3. fig. 1, False Bay, Cape of Good Hope.

Actinia (?) *timida*, sp. n., Verrill, *l. c.* p. 321, Hong-Kong Harbour.

Paranthea, g. n., Verrill, *l. c.* p. 322. Column subcylindrical, usually short, smooth; tentacles not contractile, unequal, the inner ones several times as long as the diameter of the body, outer ones much shorter; disk usually flat, not contractile. = *Dysactis*, Verrill (non Edw. & Haime), type *P. pallida*, Verrill. *P. armata*, sp. n., Verrill, *l. c.* p. 323, Hong Kong.

Phellia inæqualis, sp. n., Verrill, *l. c.* p. 325, pl. 3. fig. 4 *a* & *b*, Bonin Island. Should this species be generically separated from the typical *Phellia*, described by Gosse, Prof. Verrill would suggest the generic name of *Paraphellia*.

Phellia clavata, Duch. & Mich., = *Caprea clavata*, D. & M. (1860), not being *P. clavata*, Stimpson (1855), Verrill proposes *P. americana* for the species of Duchassaing and Michelotti.

Phellia arctica, sp. n., Verrill, *l. c.* p. 328, ocean north of Behring's Straits.

Dr. Collingwood (*l. c.*) mentions the occurrence of apparently two species of fish in the stomachal cavity of a large Sea-Anemone met with by him on the reefs of Pulo Pappan, near the island of Labuan. The Anemones are described as fully two feet in diameter; the fishes were six inches long. But the specimens were lost before being drawn or described.

Sclerobasica.

Antipathes felix, sp. n., Pourtales, *l. c.* p. 112, and *A. humilis*, sp. n., Pourtales, *l. c.* p. 112, off Havana, 270 fathoms; *A. tetrasticha*, sp. n., Pourtales, *l. c.* p. 133, off Sand Key, 120 fathoms.

Cirrhipathes filiformis, sp. n., Gray, *l. c.* p. 444, Australia.

Scleroderma ta.

Turbinolidæ.

Caryophyllia formosa, sp. n., Pourtales, *l. c.* p. 113, off Havana, 270 fathoms; *C. cornuformis*, sp. n., Pourtales, *l. c.* p. 133, off Sand Key, 248 fathoms.

Deltocyathus agassizii, sp. n., Pourtales, *l. c.* p. 113, off Havana, 270 fathoms.

Platytrochus coronatus, sp. n., Pourtales, *l. c.* p. 114, lat. 30° 41′ N., long. 77° 3′ W., 460 fathoms.

Cœnocyathus vermiformis, sp. n., Pourtales, *l. c.* p. 133, off Sombrero, 180 fathoms.

Paracyathus confertus, sp. n., Pourtales, *l. c.* p. 134, off Florida Reef, 100 fathoms.

Thecocyathus cylindraceus, sp. n., Pourtales, *l. c.* p. 134, off Florida Reef, 200 fathoms.

Rhizotrochus fragilis, sp. n., Pourtales, *l. c.* p 134, off Florida Reef, from 94 to 324 fathoms.

Oculinidæ.

Diplohelia profunda, sp. n., Pourtales, *l. c.* p. 114, off Havana, 350 fathoms; also brought up by the lead from a depth of 1050 fathoms.

Oculina disticha, sp. n., Pourtales, *l. c.* p. 135, off American Shoal, Florida; a few dead branchlets in 43 fathoms.

Lophohelia affinis, sp. n., Pourtales, *l. c.* p. 135, almost certainly = *L. prolifera* (Pallas).

Cryptohelia peircei, sp. n., Pourtales, *l. c.* p. 115, off Havana, 270 fathoms.

Stylaster complanatus, sp. n., Pourtales, *l. c.* p. 115, off Havana, 270 fathoms; *S. erubescens*, sp. n., Pourtales, *l. c.* p. 135, off Florida Reef, 120 to 324 fathoms.

Allopora miniata, sp. n., Pourtales, *l. c.* p. 136, same locality as last.

Distichopora sulcata, sp. n., Pourtales, *l. c.* p. 117, off Havana, 270 fathoms; *D. foliacea*, sp. n., Pourtales, *l. c.* p. 137, off Florida Reef, 100 to 200 fathoms.

Errina, Gray.* Pourtales emends the diagnosis of this genus as follows, *l. c.* p. 116:—Corallum branching, subflabellate, finely granulated or obscurely striated, the younger branches more or less studded with tubular pores, split downwards into a furrow; calycles at first terminal, in shape of a transverse slit, of which one lip continues to grow in a conical shape to repeat the process, whilst the other expands in the shape of a bract or spoon, hiding the calycle after it has become lateral; fossa circular and very deep; septa obscure or none; pali rudimentary, in the shape of small beads; columella pistilliform; ampullæ as in *Stylaster*. *E. cochleata*, sp. n., Pourtales, *l. c.* p. 116, off Havana, 270 fathoms, and one small specimen on Florida side; *E. glabra*, sp. n., Pourtales, *l. c.* p. 117, fragments found at a depth of 600 fathoms.

Astræidæ.

Siderastræa stellata, sp. n., Verrill, *l. c.* p. 352, Abrolhos Reefs.

Favia leptophylla, sp. n., Verrill, *l. c.* p. 353, *F. gravida*, sp. n., Verrill, *l. c.* p. 354, *F. conferta*, sp. n., Verrill, *l. c.* p. 355, Abrolhos Reefs, Brazil.

Acanthastræa braziliensis, sp. n., Verrill, *l. c.* p. 355, Abrolhos Reefs.

Heliastræa aperta, sp. n., Verrill, *l. c.* p. 356, Abrolhos Reefs; brought to the city of Bahia from Itaparica for burning into lime.

Mussa harttii, sp. n., Verrill, *l. c.* p. 357, Abrolhos Reefs.

Symphyllia harttii, sp. n., Verrill, *l. c.* p. 358, Abrolhos Reefs.

Astrocœnia pharensis, sp. n., Heller, *l. c.* p. 27, Taf. 1. figs. 1, 2, Lesina, 20 fathoms deep. All the hitherto described species of this genus have been met with as fossils.

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* Too near *Erina*, Swainson, 1833, a genus of Lepidoptera, and *Erinna*, H. & A. Adams, 1855, a genus of Mollusca; *Errina*, Gray, 1835.—E. P. W.

Madreporidæ.

Balanophyllia floridana, sp. n., Pourtales, *l. c.* p. 137, Sand Key, Florida, 26 fathoms.

Thecopsammia, g. n., Pourtales, *l. c.* p. 138. Corallum simple, attached, without costæ, covered with a complete epitheca. This genus is intermediate between *Balanophyllia* and *Heteropsammia*. *T. tintinnabulum*, sp. n., Pourtales, *l. c.* p. 138, off Florida Reef, 100 to 300 fathoms; *T. socialis*, sp. n., Pourtales, *l. c.* p. 138, with the last.

Stephanophyllia folliculus, sp. n., Pourtales, *l. c.* p. 139, off Florida Reef, 237 fathoms.

Fungidæ.

Diaseris pusilla, sp. n., Pourtales, *l. c.* p. 139, off Sand Key, 119 to 143 fathoms.

Poritidæ.

Porites solida, sp. n., Verrill, *l. c.* p. 358, Abrolhos Reefs.

PROTOZOA

(Including INFUSORIA)

BY

E. Perceval Wright, M.A., M.D., F.L.S.

A. *Separate Publications.*

Claus, C. Ueber *Euplectella aspergillum*, R. Owen, ein Beitrag zur Naturgeschichte der Kieselschwämme. Marburg, 1868, pp. 1–28. With four plates.

Schmidt, O. Die Spongien der Küste von Algier mit Nachträgen zu den Spongien des Adriatischen Meeres (Drittes Supplement) bearbeitet mit Unterstützung der Kais. Akademie zu Wien. Small folio. Leipzig, 1868, pp. 1–44, Taf. 1–5.

Contains:—1, special descriptions of the Sponges of the coast of Algiers; 2, supplementary remarks on the Sponge-fauna of

the Adriatic Sea, and descriptions of some species observed at Cette; 3, a comparison of the relationships between the Adriatic and Mediterranean Sponges.

Schoch, G. Die mikroskopischen Thiere des Süsswasser-aquariums, für Freunde des Mikroskopes und der Naturwissenschaften. 1. Buch. Die Urthiere, 8vo. Leipzig, 1868, pp. 1–60, 8 plates.

B. *Publications in Journals &c.*

Alcock, T. Questions concerning the Life-history of the Foraminifera, suggested by the examination of their dead shells. Mem. Lit. & Phil. Soc. Liverpool, 1868, vol. iii. pp. 175–181, pl. 4.

——. On *Polymorphina tubulosa*. Proc. Lit. & Phil. Soc. Liverpool, 1867, vol. vi. pp. 85–90, and Memoirs, vol. iii. 1868, pp. 244–249.

Béchamp, A., et Estor, A. De l'origine et du développement des bactéries. Compt. Rend. lxvi. pp. 859–863: May 1868.

Bocage, J. V. B. du. Notes on *Hyalonema boreale*, and on a new genus of Sponge. Ann. & Mag. Nat. Hist. vol. ii. 1868 (July), pp. 36–38, with two woodcuts.

Bowerbank, J. S. Observations on Dr. Gray's 'Notes on the arrangement of Sponges, with the description of some new genera.' Proc. Zool. Soc. Lond. 1868, pp. 118–137.

Dr. Bowerbank criticises in detail the orders, families, and genera established by Dr. Gray; this paper scarcely admits of being condensed.

Carter, H. J. On a variety of *Spongilla meyeni* from the River Exe, Devonshire. Ann. & Mag. Nat. Hist. vol. i. 1868, pp. 247–250.

Carus, J. Victor. Ueber *Noctiluca miliaris*, Sur. M. Schultze, Archiv f. mikrosk. Anatomie, Band iv. 1868, pp. 351, 352.

Carus shows that Dr. Dönitz has very erroneously ascribed to him the statement that *Noctiluca* possesses a gelatinous parenchyma comparable to the mucous tissue of the higher animals. See also Dr. Dönitz's reply.

Clark, H. James-. On the Spongiæ ciliatæ as Infusoria flagellata; or observations on the structure, animality, and relationship of *Leucosolenia botryoides*, Bowerbank. Memoirs Boston Soc. of Nat. Hist. vol. i. part 3. pp. 305–340, pls. 9 & 10; also in Ann. & Mag. Nat. Hist. vol. i. 1868, pp.

133–142 (February), pp. 188–215 (March), and pp. 250–264 (April), pls. 5, 6, & 7.

A sketch of the contents of this memoir has already been published in the Proceedings of the Boston Society of Natural History for June 20, 1866, and in the American Journal of Science for November 1866 (*vide* Zool. Record for 1866, pp. 637 & 644).

Crivelli, Balsamo-. Di alcuni organi speciali osservati in una spugna (*Acanthella acuta*). Rendic. R. Istit. Lombardo, vol. iii. Decembre 1866, pp. 333–336, and a plate.

Crivelli, Balsamo-, e Maggi. Sulla derivazione del *Bacterium termo*, Duj., e del *Vibrio bacillus*, Duj., dei granuli vitellini dell' uovo de pollo. Rend. R. Ist. Lomb. vol. i. 1868, pp. 399, 406.

—— ——. Sulla produzione del *Bacterium termo*, Duj., e del *Vibrio bacillus*, Duj. Ibid. pp. 288–303.

Davaine, C. Recherches physiologiques et pathologiques sur les Bactéries. Compt. Rend. lxvi. pp. 499–503: March 1868.

Dönitz, W. Ueber *Noctiluca miliaris*, Sur. Reichert u. Du Bois-Reymond's Archiv, 1868 (May), pp. 137–149, tab. 4.

——. Ueber *Noctiluca miliaris*, Sur. Erwiderung an Hrn. Prof. V. Carus. Ibid. (January 1869), pp. 750–754.

Ebenhard, Ernst. Beitrag zur Lehre von der geschlechtlichen Fortpflanzung der Infusorien. Zeitschr. f. wissensch. Zoologie, Band xviii. pp. 120–123: Dec. 27, 1867. Translated in Q. J. Mic. Sci. vol. viii. pp. 154–158.

Records some observations on the development of *Bursaria truncatella* (*vide* special part).

Ehrenberg, C. G. Weitere Entwicklung des *Hyalonema lusitanicum* und der Spongiaceen. Monatsber. Ak. Wiss. Berl. 1867, pp. 843–857.

Professor Ehrenberg, at the close of this paper, publishes a short notice of fourteen Marine Sponges, taken from his note-book of 1823. The descriptions were taken from the living forms.

Focke, G. W. Ueber schalenlose Radiolarien des süssen Wassers. Zeitschr. f. wissensch. Zoologie, Band xviii. 1868, pp. 345–358, Taf. 25.

Describes some very remarkable freshwater Radiolaria; but the forms are simply referred to as No. 1, No. 2, and No. 3, without being named.

Gray, Dr. J. E. Observations on Sponges, and on their ar-

rangement and nomenclature. Ann. & Mag. Nat. Hist. 1868, vol. i. pp. 161–173.

Gray, J. E. On the peculiar structure and function of the spicules of *Hyalonema*. Ibid. pp. 292–295.

——. Note on *Hyalonema boreale*, Lovén. Ibid. p. 484.

——. On *Hyalonema sieboldii*. Ibid. vol. ii. p. 264.

——. On a new form of *Hyalonema sieboldii*, and on its manner of growth. Ibid. pp. 264–276 (woodcut).

——. On *Tetilla euplocamos* and *Hyalonema boreale*. Ibid. p. 319.

——. Note on *Hyalonema schultzei*, Semper. Ibid. pp. 373–377, and woodcut.

——. On the name *Alcyoncellum*. Ibid. p. 390.

——. Letter from, containing a reply to Dr. Bowerbank's remarks on his 'Notes on Sponges.' Proc. Zool. Soc. Lond. 1868, p. 532.

——. Notes on *Theonella*, a new genus of Coralloid Sponges from Formosa. Ibid. pp. 565, 566 (figured).

——. Notes on Ceratellidæ, a family of Keratose Sponges. Ibid. pp. 575–579 (figured).

——. Notes on *Xylospongia cookii*, a new genus of palmated Sponges in the collection of the British Museum. Ibid. p. 637.

Häckel, E. Monographie der Moneren. Jenaische Zeitschrift für Med. u. Naturwissen. Band iv. Heft 1, Leipzig, 1868, pp. 64–137, Taf. 2 & 3.

Häckel's monograph of the Monera consists of :—1. An historical introduction. This name was first applied to the non-nucleated amœbiform organisms by Häckel, in his 'Generelle Morphologie;' and the group embraces some of the forms described by Max Schultze and Cienkowski. 2. Descriptions of new Monera—*Protomyxa aurantiaca, Myxastrum radians, Myxodictyum sociale, Protamœba primitiva.* 3. Remarks on the protoplasm theory, chiefly a rather strongly worded protest against the heresies of Reichert, whose writings are dignified by being called "the most astonishing productions of modern zoological literature." 4. On the limits of the Protista. This name is given by Häckel to the "boundary kingdom" intermediate between the animal and vegetable kingdoms. In our special part we give the groups placed in this third kingdom by Häckel. 5. The comparative morphology of the Monera. 6. The systematic arrangement of the Monera.

Herklots, J. A., et Marshall, W. Notice sur deux espèces nouvelles d'Eponges de la Famille des Lophospongiæ. Archives Néerlandaises, tome iii. 5me Livraison, 1868, pp. 435–438.

Describes a new species of *Euplectella* (*E. oweni*), and a new genus near *Hyalonema* (*Hyolothouma*).

Huxley, T. H. On some organisms living at great depths in the North Atlantic Ocean. Quart. Journ. Micr. Science, 1868, vol. xvi. pp. 203–212, pl. 4.

Describes the Coccoliths and Coccospheres from the Atlantic, and establishes the genus *Bathybius*.

Linton, J. On a sample of Sand from Dogsbay, Connemara, co. Galway, skimmed from the surface of the sea July 1866. Proc. Lit. & Phil. Soc. Liverpool, 1867, vol. vi. pp. 184–186.

Lovén, S. Om en märklig i Nordsjön lefvande art af Spongia. Œfversigt af K. Vetenskaps-Akademiens Förhandlingar. Årg 25. No. 2. Stockholm, 1868, pp. 105–121, Taf. 2.

A translation of this paper, omitting the list of writers on the subject of *Hyalonema*, and with one or two little additions in the last two paragraphs, will be found in Ann. & Mag. Nat. Hist. 1868 (August), vol. ii. pp. 81–91, pl. 6; also in Archiv f. Naturg. 1868, Band xxxiv. pp. 82–101, Taf. 2.

Maclay, Miklucho-, N. Beiträge zur Kenntniss der Spongien. Jenaische Zeitschrift für Med. u. Naturwiss. August 1868, Band iv. pp. 221–240, mit Taf. 4 & 5.

Contains:—1, on *Guancha blanca*, a new calcareous Sponge; 2, on the "Cœlenteric" system of the Sponges; 3, on the formation of the Sponge-mass; 4, on the position of the Sponges in the animal kingdom. (The author does not appear to have seen Professor H. J.-Clark's paper on the affinity of the Sponges.)

Martens, E. von. Ueber einige ostasiatische Süsswasserthiere. Archiv f. Naturg. 1868, xxxiv. pp. 1–67, Taf. 1. IV. Ein Süsswasserschwamm aus Borneo, pp. 61–64, Taf. 1. fig. 1.

Thomson, Wyville. On the Vitreous Sponges. Ann. & Mag. Nat. Hist. 1868 (February), vol. i. pp. 114–132, with plate 4 and a woodcut.

Wallich, G. C. On Coccoliths and Coccospheres. Ann. & Mag. Nat. Hist. 1868, vol. ii. pp. 317–319.

Wright, E. Perceval. Note on *Hyalonema*, Gray. Ann. & Mag. Nat. Hist. 1868, vol. ii. p. 320.

Wright, E. Perceval. Notes on Deep-sea Dredging off the coast of Portugal. Ibid. pp. 423–427.

I. INFUSORIA.

Béchamp & Estor (*l. c.*), in their researches concerning the origin and development of the Bacteria, arrive at the following conclusions:—

1. There exists, in all animal cells which they have examined, granulations, normal, constant, essential, analogous to those called by M. Béchamp *microzyma*. They have more especially studied those of the liver.

2. In a physiological condition these preserve apparently the form of a sphere.

3. Outside the economy, without the intervention of any foreign germs, these lose their normal form. They commence to associate together into a chaplet, in which state they form a genus under the name of *Torula*; later on, they become so elongated as to represent isolated or associated Bacteria.

4. These facts have a considerable importance in pathology. These Bacteria, far from being the cause of disease, are, on the contrary, the effects of it.

Capt. Mitchell, writing from Madras, states that he has transferred, just about sunrise, a drop of dew from the point of a leaf to an animalcule-cage and examined it. He found in the drop living ciliated Infusoria. In about one out of every two drops examined he found sometimes one, sometimes two, of the Infusoria. The fact is simply recorded. Proc. Lit. & Phil. Soc. Liverpool, 1868, vol. vii. p. 23,

James-Clark (*l. c.*) describes the following new genera; but no detailed diagnoses are given; the species, however, are described and figured in detail:—*Bicosœca*, p. 309, *Codonœca*, p. 312, *Salpingœca*, p. 319, *Heteromastix*, p. 335 (the original description of this genus appeared in a work by the author entitled 'Mind in Nature,' p. 146, fig. 88).

New species:—

Monas neglecta, Jas.-Clark, *l. c.* p. 308, pl. 9. figs. 5, 6.

Bicosœca gracilipes, Jas.-Clark, *l. c.* p. 309, pl. 9. figs. 34, 35, found on *Sertularia cupressina*; *B. lacustris*, Jas.-Clark, *l. c.* p. 311, p. 9. figs. 33–33*a–c*, streams and lakes, attached to filamentous algæ (*vide* Zool. Record, 1866, p. 642).

Codonœca costata, Jas.-Clark, *l. c.* p. 312, pl. 9. fig. 36, found in company with *Bicosœca gracilipes*.

Salpingœca gracilis, Jas.-Clark, *l. c.* p. 319, plate 9. figs. 38, 39, *S. amphoridium*, Jas.-Clark, *l. c.* p. 322, pl. 9. figs. 37, 37*d* (both these species are freshwater); *S. marinus*, Jas.-Clark, *l. c.* p. 320, pl. 9. figs. 28–32, on *Dynamena pumila*, Lamx.

Anisonema concavum, Jas.-Clark, *l. c.* p. 333, pl. 10. figs. 65–69.

Heteromastix proteiformis, Jas.-Clark, *l. c.* p. 335, pl. 10. figs. 70–74.

Dysteria prorœfrons, Jas.-Clark, *l. c.* p. 336, pl. 10. figs. 77, 78.

Pleuronema instabilis, Jas.-Clark, *l. c.* p. 337, pl. 10. figs. 75, 76.

The following Infusoria are described and figured by H. James-Clark (*l. c.*):—

Monas termo, Ehr. ?, p. 306, pl. 9. figs. 1–4.

Codosiga pulcherrimus, Clark, p. 313, pl. 9. figs. 7–27.

Anthophysa müllerí, Bory, p. 326, pl. 10. figs. 47–63.

Astasia tricophora, Clap., p. 330, pl. 9. figs. 45, 46.

Monas consociata, Fres. Archer makes some remarks on a form apparently referable to this species. Quart. Journ. Micr. Science, 1868, vol. xvi. p. 119.

Bursaria truncatella. Eberhard (*l. c.*), in noticing the appearance of part 2 of Stein's 'Organismus der Infusionsthiere,' contrasts Stein's account of the development of this Infusorian with his own observations, of which he gives a brief record, promising future details with illustrations. He demonstrates for the first time the passage of an "acineta" form into a ciliate form in young Infusoria,—this observation confirming Stein's notion that the minute Acinetæ proceeding from *Paramœcium* are in reality its offspring, and not parasites as asserted by Balbiani.

II. SPONGIIDA.

Dr. J. E. Gray (*l. c.* p. 165) proposes the following divisions of the Malacosporæ:—

Subsection I. Leiospongiæ. Spicules none, or, when present, of only one kind.

Order 1. *Keratospongiæ* (Horny Sponges), including the families Spongiadæ &c.

Order 2. *Raphispongiæ* (Needle Sponges)—that is, the order Leiospongiæ of Dr. Gray's Table (*vide* Zool. Record, 1867, p. 670), including Halichondriadæ &c.

Subsection II. Acanthospongiæ. Spicules always present, of more than one form, akin in each Sponge.

Order 3. *Coralliospongiæ* (Coral Sponges). Spicules anchylosed by siliceous matter, as Dactylocalycidæ, Aphrocallistidæ, Euplectelladæ.

Order 4. *Armatospongiæ* (Armed Sponges). Spicules distinct, more or less immersed in horny or fleshy matter. Includes Esperiadæ and Tethyadæ.

Subsection III. Arenospongiæ, or Sand Sponges, &c.

Wyville Thomson (*l. c.*) proposes the following modification of Dr. Schmidt's arrangement of Sponges:—

				Genera.
Class Porifera.	Subclass I. (Porifera) Calcarea			*Grantia* &c.
	Subclass II. (Porifera) Silicea.	Order 1. Vitrea		*Hyalonema* &c.
		Order 2. Halichondrida	Suborders. *a.* Halichondrina	*Halichondria* &c.
			b. Gumminina	*Gummina* &c.
			c. Spongina	*Spongia* &c.
		Order 3. Corticata		*Geodia* &c.
		Order 4. Arenosa		*Xenospongia*.
		Order 5. Halisarcina		*Halisarca*.

Calcarea.

Calcispongiadæ.

Leucosolenia (*Grantia*) *botryoides*, Bowerbank, is described in great detail by Clark, *l. c.* pp. 323–326, pl. 9. figs. 40–44, pl. 10. fig. 64.

Guancha blanca, nov. gen. et sp., Miklucho-Maclay, *l. c.* p. 221, Taf. 4. fig. 1, Canary Islands. No generic or specific diagnosis of this Sponge is given. It appears to be closely related to the genus *Ute*. Two forms of it were met with, the single and the compound form. The Sponge is from $1\frac{1}{2}$ to $2\frac{1}{2}$ millims. long, $\frac{1}{4}$ millim. broad, spindle-shaped, with a tolerably long stalk. The body of the Sponge is loose and pliant, so as to be wafted about by the least movement of the water to one or the other side. On the upper end is the mouth-opening, beset with large spicules, seen by the unassisted eye. The outer surface is smooth, and of a shining white colour.

The development of this Sponge is either by budding or by gemmules, both of which forms are here described. The mass of the Sponge is also added to by concrescence, or the fusing together of several bodies into one mass; and commonly, though many individual forms may thus aggregate to form one mass, there will be but a single mouth-opening.

The cœlenterate system is described as found to exist in *Guancha blanca*; and the conclusion is come to that all living Sponges and Cœlenterata spring from a common primary stock, but the former remained at a much lower stage of differentiation. The Petrospongida remained still nearer the ground-plan, and help to bridge over the chasm between it and the existing Sponges.

When treating of the limits of the Protista, Häckel (*l. c.* p. 118) incidentally refers to the researches of Miklucho, and expresses his satisfaction at the additional proofs given in his memoir on *Guancha blanca* of the cœlenterate affinities of the Sponges. The so-called oscula are not only excretory openings, but serve also for the reception of food and water—are at once anal and oral, are indeed the analogues, and probably the homologues, of the stomachic cavities of the Cœlenterata. The canals proceeding from the oscula correspond to those which ramify in the parenchyma of many Anthozoa. Their stomachic cavity is even in some Sponges (*Axinella*) divided into compartments; and from this fact, and their mode of reproduction, the relationship of Sponges and Anthozoa becomes still more probable. So, following Leuckart in uniting them with the Cœlenterata, Häckel would divide the cœlenterate stem as follows:—

I. *Spongiæ* (non-urticating Cœlenterates).

II. *Acalephæ* (urticating Cœlenterates).

In a footnote, the tendency of which is, apparently, to reconcile all the existing theories about the genus *Hyalonema*, the author remarks that this relationship throws a particular light on *Hyalonema*. "May not, after all, spongious elements and polypous covering be parts of the same animal, and *Hyalonema* a direct descendant of the common stem of Sponges and Acalephes?"

Nardoa canariensis, *N. rubra*, and *N. sulphurea* are indicated by Miklucho-Maclay as new species from the Canary Islands, but they are not described. *L. c.* p. 230, footnote.

Silicea.

Order 1. *Vitrea.*

The order Vitrea is established by Wyville Thomson (*l. c.*), and is characterized as follows:—

Vitrea. Sarcode in small quantity, very soft; never containing formed horny matter, either fibrous, membranous, or granular. The skeleton consists entirely of siliceous spicules, either separate (in fascicles or scattered) or anastomosing and combined into a continuous siliceous network. The sarcode contains small spicules of a different character from the general spicules of the skeleton, and of complicated forms. The spicules, whether of the skeleton or of the sarcode, may all be referred to the hexradiate stellate type. Ex. *Hyalonema*, *Dactylocalyx*.

A list of the known genera and species of Vitreous Sponges is given (p. 119); and remarks are appended "on the conditions of the sarcode in this group," "on the siliceous skeleton," "on the general structure of the Sponges of the group," and "on the relations of the group," the author's impression being that it is through this order that the Sponges pass into the Radiolaria.

Habrodictyon, g. n., Wyville Thomson, *l. c.* p. 126. Sponge-body subcylindrical, tubular, attached by a slightly contracted base. The walls of the tube composed of a perfectly irregular network of bundles of siliceous needles loosely and irregularly arranged in sheaves crossing one another at low angles, and connected by a small quantity of soft mucilaginous sarcode. The spicules of the skeleton all essentially of the hexradiate form, free and separate from one another, or rarely connected in groups of two or three. The spicules of the sarcode very numerous, "floricomo-hexradiate stellate" and various simple and branched modifications of the hexradiate type. This genus is established for the *Alcyoncellum corbicula* of Valenciennes, and for the *A. speciosum* of Quoy & Gaimard.

Habrodictyon corbicula, Val. (sp.),=*Alcyoncellum corbicula*, Val.,=*Heterotella corbicula*, Gray, is described by Wyville Thomson, *l. c.* p. 129, pl. 4. figs. 1 *a*–1 *f*.—*H. speciosum*, Quoy & Gaimard (sp.),=*A. speciosum*, Q. & G., =*Corbitella speciosa*, Gray, is described by Wyville Thomson, *l. c.* p. 131, pl. 4. figs. 2 & 2 *a*.

Euplectella. Semper's 'Einige Worte über *Euplectella aspergillum*, Owen, und seine Bewohner' will be found translated in Ann. & Mag. Nat. Hist. July 1868, pp. 26–30 (*vide* Zool. Record, 1867, pp. 665, 676).

Claus, in his memoir on *Euplectella aspergillum*, describes at great length the structure of the spicules of this species. The memoir is accompanied by an excellent photograph of two specimens of this beautiful Sponge.

Euplectella oweni, sp. n., Herklots & Marshall, *l. c.* p. 438, Japan.

Hyalothouma * is the name given by Herklots & Marshall *l. c.* p. 437, to

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* We have been unable to find out the exact date of publication of this genus, which equals Gray's genus *Semperella*.

a genus to contain the *Hyalonema schultzei* of Semper and a new species taken at the Island of Ceram at a great depth, and now in the museum at Leyden. *H. ludekingi*, sp. n., Herklots & Marshall, *l. c.* p. 438.

Dr. J. E. Gray, *l. c.* p. 373, regards *Hyalonema schultzei*, Semper, as belonging to *Euplectella*, or a genus near to *Euplectella*, which he calls *Semperella*.

Semperella, g. n., Gray (November 1, 1868), *l. c.* p. 376, fig. *c*. A tubular vase-shaped sponge, with the tube closed with a convex lid, and the wall of the tube formed of elongated, slender, subcylindrical, thread-like, siliceous spicules, which are kept in the vase-shaped form by the sarcode. The base contracted, some of the thread-like spicules of the tube and others being produced into a stem, which is sunk into the mud, the radical filaments barbed near the end, and with a cup-shaped anchor at the tip. *S. schultzei* = *Hyalonema schultzei*, Semper.

Dr. J. E. Gray (*l. c.* vol. i. p. 293) points out the peculiar structure of the long spicules of *Hyalonema*, and thinks that this very peculiarity helps to prove that they are secretions of the hard flesh of the polype that surrounds each of them, and so form part of the community of the Palythoæ.

Dr. J. E. Gray also argues against the views of Max Schultze, and in favour of *Hyalonema* being an Actinozoan. He, however, agrees with Prof. Lovén in believing that *Hyalonema* grows with the loose portion of the coil of spicules in the ground or mud. *L. c.* vol. ii. p. 268.

Hyalonema boreale. Under this name Lovén (*l. c.*) describes two specimens of a small siliceous Sponge—one specimen found on the coast of Finmark, and the other dredged from a depth of about 200 fathoms in the North Sea, on the Storeggen. The Sponge is about 2 inches high, with a spherical body, which may be called a head, supported by a slender stem, round, and thrice as long as the body. While indicating the differences that exist between this Sponge and *H. sieboldii*, Gray, the author thinks it convenient for the present to include it in Gray's genus *Hyalonema*, emending this for the purpose as follows:—

Spongia silicea; corpus clavatum in facie superiore, applanata, oscula gerens, stipite intrante suffultum tereti, radiculis affixo. Spicula fusiformia; stipitis ad longitudinem spiraliter et arte conjuncta parenchymate tenui; corporis in fasciculos radiantes congesta, interstitiis parenchyma lacunosum amplum continentibus; cuticulæ simplicia arcuata; amphidisci [gemmulas vestientes ?].

It has been overlooked by some authors that this emended description of *Hyalonema* asserts that the Sponges of the genus are affixed by the stem-like portion in the mud.

Dr. Gray (*l. c.*) regards *Hyalonema boreale*, as a siliceous Sponge, belonging to the family Halichondriadæ, perhaps having affinities with *Halichondria ficus*, Johnst., which is the type of the genus *Ficulina*, Gray.

The Recorder mentions (*l. c.*) having dredged living specimens of the genus *Hyalonema* off the coast of Portugal, near Setubal, and records the fact, now for the first time proved, that the *Hyalonema* grows attached to the mud by its stem.

Professor Bocage (*l. c.* p. 38) describes and figures a small Sponge (*L. borealis*) which he had at first thought was the same as Lovén's species, but which he afterwards fancied was the young of *H. lusitanicum*; on reexamination, he decides it to belong to a new genus, to which he gives the name

Lovenia. [This name being preengaged, has since been altered to *Podospongia*.]

Theonella, g. n., Gray, *l. c.* p. 565. Sponge cup-shaped, thick, covered with a smooth rather coriaceous external coat, internally formed of netted spicules, arranged so as to leave an hexangular mass; the spicules subcylindrical, united at the inosculation of the network by a siliceous callosity; the body of the spicules generally smooth, but sometimes slightly spiculate on the surface, with numerous very slender fusiform spicules of very different sizes mixed in the sarcode. The parietes of the cup are pierced with many cylindrical tubes opening on the edge of the cup; but there is no appearance of any spines or oscules on the edge or surface of the dry specimen. Coral-like spicular network very like *Macandrewia*. The intersections of the spicules are rough and tubercular, like the knots of a net, but more rugose: the spicules themselves are generally smooth; but some of them are more or less spinulous, with short acute tubercles. The fusiform spicules in the sarcode are abundant, very slender, slightly tapering to, and acute at, each end; they vary greatly in length, but are always slender and smooth; they are generally straight, but some few are curved like a nearly expanded bow. *T. swinhoei*, sp. n., Gray, *l. c.* p. 566, figs. 1–3, Formosa.

Order 2. *Halichondrida*.

Spongilla meyeni (*Ephydatia*, Gray), var. *parfitti*, Carter. Carter (*l. c.*) describes this variety, which differs chiefly from the *Sp. meyeni* of Bombay in the decidedly spinous character of one-third of its largest spicules, while about the same proportion in the Bombay species can only be regarded as "incipiently spinous."

Spongilla vesparium, sp. n., Martens, *l. c.* p. 61, Taf. 1. fig. 1, Borneo. Near *Sp. reticulata*, Bbk., Amazons.

Xylospongia, g. n., Gray, *l. c.* p. 637. Frond compressed, fan-shaped, divided above into strap-shaped flat lobes, rather wider at the ends. Root an expanded disk. Stem thick, wood-like, subcylindrical below, compressed above and expanded into a flat fan-like frond, which is divided above into eight or ten strap-like flat lobes, like the fingers on the hand, the lobes varying rather in width, the outer one on each side being the narrowest. The root and stem are solid, wood-like; the upper part of the broad, expanded, fan-like part of the stem more or less pierced with different-sized perforations, and the part divided into strap-like reticulate lobes, which are generally rather wider at the ends. The expanded part of the stem and the strap-like lobes are all formed of parallel cylindrical filaments, about as thick as twine, which in the upper part of the stem are united together by wood-like matter, leaving only a few perforations between them; but in the strap-like lobes the filaments are much more distinct, rather flexuous, inosculating where they meet their neighbouring subparallel filaments, united by the wood-like material, which is not quite so thick as the filaments. The surface is rather rugose, the minute rugosities of the stem and filaments being placed longitudinally and parallel to each other. Spicules of one kind, minute, slender, fusiform, often very slightly curved or arched. *X. cookei*, sp. n., Gray, *l. c.* p. 637, hab. unknown.

Corticatæ.

Placospongia melobesioides, Gray, 1867, is, according to Bowerbank, *l. c.* p. 132, *Geodia carinata*, Bbk. Phil. Trans. 1858.

Halisarcidæ.

Halisarca. Dr. Bowerbank says, *l. c.* p. 137, that in every specimen that he has as yet seen of the Sponge so designated he has, by the aid of Canada balsam, detected minute siliceous spicules *in situ*; but on this question see the elaborate and conclusive researches of Oscar Schmidt, *l. c.* p. 24.

Mr. W. Andrews places on record the occurrence in Ireland of one or two Sponges, the more important of which are *Pachymatisma johnstonia*, *Halichondria* (*Dictyocylindrus*) *hispidus*, and *Raphirus griffithsiæ*. In mentioning the latter species, the author falls into the curious mistake of confounding it with the *Cliona celata* of Grant. Ann. & Mag. Nat. Hist. vol. i. 1868, pp. 307–308.

We here give a summary of the contents of the 3rd Supplement to Oscar Schmidt's 'Sponges of the Adriatic':—

Algierian Sponges, New genera and species:—

Sarcomella, g. n., Schmidt, *l. c.* p. 1. Gelatinous, reminding one of the substance of the Acalephæ, containing simple needle-like spicules. *S. medusa*, sp. n., Schmidt, *l. c.* p. 1.

Chondrosia, Nardo, = *Gumminia*, Sdt. *C. plebeja*, sp. n., Schmidt, *l. c.* p. 1.

Corticium plicatum, sp. n., Schmidt, *l. c.* p. 2, Taf. 3. fig. 11.

Osculina, g. n., Schmidt, *l. c.* p. 2. Oscula very numerous, either plain in outline or with raised walls, or with these walls fenestrated. The consistence of the sponge is the same as in *Chondrilla*. *O. polystomella*, sp. n., Schmidt, *l. c.* p. 3, Taf. 1.

Euspongia virgultosa, sp. n., Schmidt, *l. c.* p. 4.

Cacospongia aspergillum, sp. n., Schmidt, *l. c.* p. 95, Taf. 2. fig. 1.

Hircinia pipetta, sp. n., Schmidt, *l. c.* p. 5, Taf. 2. fig. 2; *H. lingua*, sp. n., Schmidt, *l. c.* p. 6, Taf. 2. fig. 3.

Siphonochalina, g. n., Schmidt, *l. c.* p. 7. Branched or unbranched tubes. The outer surface solid, while between the somewhat projecting ends of the radiating bundles a fine dense network is spread out. *S. coriacea*, sp. n., Schmidt, *l. c.* p. 7, Taf. 2. fig. 4.

Chalinula, g. n., Schmidt, *l. c.* p. 7. External appearance and general texture of a true *Reniera*, but with a keratose framework, which completely covers over a great portion of the bundles. *C. renieroides*, sp. n., Schmidt, *l. c.* p. 7; *C. membranacea*, sp. n., Schmidt, *l. c.* p. 8.

Sclerochalina, g. n., Schmidt, *l. c.* p. 8. Appearance that of *Siphonochalina*, but with a coarse and irregular network, somewhat in proportion as *Cacospongia* is to *Euspongia*. *S. asterigena*, sp. n., Schmidt, *l. c.* p. 8, Taf. 2. fig. 5.

Pachychalina, g. n., Schmidt, *l. c.* p. 8. Bundles made up of many rows of spicules, which are fast bound together by keratose material. *P. rustica*, sp. n., Schmidt, *l. c.* p. 8, Taf. 2. fig. 6.

Clathria morisca, sp. n., Schmidt, *l. c.* p. 9, Taf. 2. fig. 7.

Axinella salicina, sp. n., Schmidt, *l. c.* p. 9.

Raspailia salix, sp. n., Schmidt, *l. c.* p. 9, Taf. 2. fig. 8, very near to *R. viminalis*. *R. syringella*, sp. n., Schmidt, *l. c.* p. 10, Taf. 2. fig. 9.

Dictyonella, g. n., Schmidt, *l. c.* p. 10. Sponge-mass of very varied external appearance, sometimes shrubby, sometimes massy and knobby, having a distinct outer membrane. The skeleton is distinctly marked out, and is symmetrical. The spicules are simple. *D. cactus*, sp. n., Schmidt, *l. c.* p. 10; *D. labyrinthica*, sp. n., Schmidt, *l. c.* p. 10.

Desmacidon armatum, sp. n., Schmidt, *l. c.* p. 11, Taf. 2. fig. 10; *D. caducum*, sp. n., Schmidt, *l. c.* p. 11, Taf. 2. fig. 11; *D. arciferum*, sp. n., *l. c.* p. 12, Taf. 2. fig. 12.

Subcrotelites, g. n., Schmidt, *l. c.* p. 12. Appearance that of a fleshy shrubby species of *Suberites*. Spicules in a distinct network. No outer membrane, but outer surface smooth. *S. mercator*, sp. n., Schmidt, *l. c.* p. 12, Taf. 2. fig. 15.

Sclerilla filans, g. et sp. n., Schmidt, *l. c.* p. 12, Taf. 5. fig. 1; *S. texturans*, sp. n., Schmidt, *l. c.* p. 13.

Myxilla proteidea, sp. n., Schmidt, *l. c.* p. 13, Taf. 2. fig. 13; *M. pulvinar*, sp. n., Schmidt, *l. c.* p. 14, Taf. 2. fig. 14.

Suberites spongiosus, sp. n., Schmidt, *l. c.* p. 14; *S. hystrix*, sp. n., Schmidt, *l. c.* p. 15; *S. rugosus*, sp. n., Schmidt, *l. c.* p. 15.

Pachastrella, g. n., Schmidt, *l. c.* p. 15. A *Compaginea* without an outer membrane, with spicules of a character partly that of a *Compaginea* and partly that of a *Corticata*. *P. monilifera*, sp. n., Schmidt, *l. c.* p. 15, Taf. 3. fig. 7.

Callites, g. n., Schmidt, *l. c.* p. 16. A genus standing on the boundary between the *Compagineæ* and the *Gummineæ*, where the sarcode-substance forms a most irregular scaffold or shelf-work of passages and channels, yet there is no bark-layer (a characteristic of *Gummineæ*). Siliceous star-like bodies are present. *C. lacazii*, sp. n., Schmidt, *l. c.* p. 16, Taf. 3. fig. 2.

Spirastrella, g. n., Schmidt, *l. c.* p. 17. There is commonly present in the barky layer of this genus a form of star-like siliceous bodies, on which the rays are arranged spirally. *S. cunctatrix*, sp. n., Schmidt, *l. c.* p. 17, Taf. 3. fig. 8.

Ancorina simplicissima, sp. n., Schmidt, *l. c.* p. 18, Taf. 3. fig. 9, Taf. 4. fig. 9; *A. tripodaria*, sp. n., Schmidt, *l. c.* p. 18, Taf. 3. fig. 10.

Papyrula, g. n., Schmidt, *l. c.* p. 18. A genus of *Corticata*, in which the barky layer contains small double-pointed [furcated attenuato-patento-ternate of Bowerbank?] spicules. *P. candidata*, sp. n., Schmidt, *l. c.* p. 18, Taf. 4. fig. 1.

Stelleta mucronata, sp. n., Schmidt, *l. c.* p. 19, Taf. 4. fig. 2; *S. pathologica*, sp. n., Schmidt, *l. c.* p. 19, Taf. 3. figs. 3, 4; *S. scabra*, sp. n., Schmidt, *l. c.* p. 19, Taf. 4. fig. 3; *S. euastrum*, sp. n., Schmidt, *l. c.* p. 20, Taf. 4. fig. 4; *S. geodina*, sp. n., Schmidt, *l. c.* p. 20, Taf. 4. fig. 5; *S. intermedia*, sp. n., Schmidt, *l. c.* p. 21, Taf. 4. fig. 6.

Geodia canaliculata, sp. n., Schmidt, *l. c.* p. 21, Taf. 4. fig. 7.

Adriatic Sponges.

Halisarca lobularis and *H. guttula*. The anatomy of these species is given and illustrated by Schmidt, *l. c.* p. 24, Taf. 5. figs. 2, 3.

Chondrosia tuberculata, sp. n., Schmidt, *l. c.* p. 24, Taf. 5. fig. 4, Sebenico.

Corticium stelligerum, sp.n., Schmidt, *l. c.* p. 25, Taf. 3. fig. 6, found on *Caryophyllia cæspitosa* at Sebenico.

Raspaigella brunnea, g. et sp. n., Schmidt, *l. c.* p. 25, Muggia.

Esperia tuberosa, sp. n., Schmidt, *l. c.* p. 26, Canal of Zara.

Scopalina toxotes, sp. n., Schmidt, *l. c.* p. 26, Taf. 5. fig. 5, Zara.

Cribrella elegans and *C. hamigera*. Varieties of these species are figured by Schmidt, *l. c.* Taf. 5. fig. 6.

Myxilla tridens, Sdt., = *M. rosacea*, Sdt., Schmidt, *l. c.* p. 27.

Reniera implexa, sp. n., Schmidt, *l. c.* p. 27, Bay of Muggia; *R. informis*, sp. n., Schmidt, *l. c.* p. 27, Bay of Muggia.

Halichondria anhelans of Lieberkühn contains two very distinct species of Sponge; these are described by Schmidt, *l. c.* p. 28, as *Reniera inflata* and *R. muggiana*.

Nardoa reticulum, Sdt. Kölliker, in his 'Icones Histologicæ,' says that *Nardoa* has no oscula; but Schmidt, *l. c.* p. 28, remarks their presence in this species, and figures them, Taf. 5. figs. 7, 8.

Syconella quadrangulata, g. et sp. n., Schmidt, *l. c.* p. 29, Taf. 5. fig. 9. Schmidt arranges the genera having affinities to this one as follows:—

Ute. The osculum is neither surrounded by a radiating crown nor capped on its end with a thin-skinned chimney.

Dunstervillia. Osculum with an upright, and another almost horizontal, radiating crown.

Sycon. Osculum with a simple radiating crown.

Syconella. Osculum without a radiating crown, but on the end a thin-skinned chimney-like headpiece.

New species of Sponges from Cette:—

Spongelia nitella, Schmidt, *l. c.* p. 30.

Esperia sentinella, Schmidt, *l. c.* p. 30, Taf. 5. fig. 11.

Reniera accommodata, Schmidt, *l. c.* p. 30; *R. porrecta*, Schmidt, *l. c.* p. 30.

Suberites paludum, Schmidt, *l. c.* p. 31, Taf. 5. fig. 12; *S. villosus*, Schmidt, *l. c.* p. 31.

Stelletta anceps, Schmidt, *l. c.* p. 31.

Ute viridis, Schmidt, *l. c.* p. 32.

Tetilla euplocamos, n. g. and sp., Schmidt, *l. c.* p. 40, Taf. 5. fig. 10, for a remarkable little Sponge received from Fr. Müller from Desterro, which appears to have affinities on the one side towards *Tethya*, and on the other towards *Hyalonema*.

Gray (*l. c.*) forms a new family for the two following genera, which apparently belong to the Sponges:—

Ceratella, g. n., Gray, *l. c.* p. 577. Sponge irregularly dichotomously branched, more or less expanded on a plane from a single base; of a dark brown colour, of a uniform, hard, horny substance; stem hard, dark brown, solid; base dilated, rather compressed, of a uniform rigid somewhat spongy texture, with a velvety surface, which is formed of an abundance of very minute, cylindrical, tortuous grooves; the branches and branchlets tapering, formed of a very large quantity of nearly parallel, paler brown, projecting, horny points, divergent at the ends, and producing a spinulous surface. The

branchlets tapering to a point, with a series of acute divergent tufts of fibres on each side (oscules or cells), with a small circular mouth below the produced acute outer edge of these tufts; one of these is placed at the end of the branchlet, and the tufts seem to be produced at the base of the previously formed ones. *C. fusca*, sp. n., Gray, *l. c.* p. 579, fig. 2, Bondy Bay, New South Wales.

Dehitella, g. n., Gray, *l. c.* p. 579. Sponge dichotomously branched, expanded, growing on a large tuft from a broad, tortuous, creeping base, of a dark brown colour, and uniform hard, rigid substance. Stem hard, cylindrical, opake, smooth; branches and branchlets tapering to a point, covered with tufts of projecting horny spines on every side; those on the branches often placed in sharp-edged, narrow, transverse ridges; those of the upper branches and branchlets close but isolated, and divergent from the surface at nearly right angles. This genus differs from *Ceratella* by the greater thickness and cylindrical form of the stem, by the more tufted and irregular manner of growth, and by the tufts of spines (oscules or cells) being more abundant, and equally dispersed on all sides of the branches and branchlets. *D. atrorubens*, sp. n., Gray, *l. c.* p. 519, fig. 1, Australia.

III. RHIZOPODA.

Diplophrys archeri, n. g. & sp., Barker, Quart. Journ. Micr. Science, vol. xvi. (1868) p. 123. Dr. Barker proposes this genus for a very minute Rhizopod met with by him in the county of Wicklow. It is exceedingly minute, nearly orbicular or broadly elliptic; from each of two opposite points there emanates a tuft of filiform pseudopodia; and in the body of the organism is immersed a refractive globule of an orange or amber colour.

Cystophrys, g. n., Archer, Quart. Journ. Micr. Science, 1868, vol. xvi. p. 295. Body irregular in figure, without test or integument, possessing, immersed in its substance, a number (often considerable) of spherical cells, each with nucleus, nucleolus, and special wall, their contents increasing by self-fission; pseudopodia slender and more or less ramified, and occasionally mutually incorporating. *C. häckeliana*, sp. n., fresh water, co. Dublin.

Arcella globosa, sp. n., Archer, Quart. Journ. Micr. Science, 1868, vol. xvi. p. 69, co. Dublin.

Clathrulina elegans, Cie. W. Archer exhibited specimens of this species, and, believing it to be undescribed, named it *Podosphæra hæckeliana*; it had been found both in Wales and in Ireland. Ibid. p. .

Actinophrys. Archer describes, without naming, a species of this genus having certain affinities to *A. oculata*, Stein. Quart. Journ. Micr. Science, 1868, vol. xvi. pp. 70–71.

Foraminifera. Dr. Alcock calls attention to the large quantity of recent Foraminifera to be met with in Dogs' Bay, Connemara. Proc. Lit. & Phil. Soc. Liverpool, 1866, vol. v. p. 15. He names some of the more remarkable. Ibid. p. 99. For a more complete list of species met with, see Mr. Linton's paper, *l. c.*

Dr. Alcock gives a list of the Foraminifera washed out of the shell of the rare *Halia priamus* from Cadiz. Proc. Lit. & Phil. Soc. Liverpool, 1866, vol. v. p. .

Lagena crenata, P. & J. This species, described from Swan River, is re-

corded as found at Dogs' Bay, Connemara. Alcock (Memoirs), *l. c.* p. 176. *L. antiqua*, sp. n., Alcock, *l. c.* p. 176, pl. 4. fig. 3, Dogs' Bay. Some very interesting varieties or monstrosities of species of *Lagena* and *Globigerina* are also figured in this paper of Dr. Alcock.

Rhabdammina abyssicola is the name given by Sars to a new Rhizopod, not yet, so far as we can learn, described by its discoverer. (*Vide* Sars, Mém. pour servir à la connaissance des Crinoïdes vivants, p. 52.)

Coccoliths.

Professor Huxley (*l. c.*) supposes that the stickiness of the mud from the bottom of the Atlantic arises from its containing innumerable lumps of a transparent gelatinous substance. When one of these minute lumps is submitted to microscopical analysis it exhibits, imbedded in the structureless matrix, granules, coccoliths, and foreign bodies. The *granules* vary in size from $\frac{1}{40000}$ of an inch to $\frac{1}{8000}$. Some are rounded, some are biconcave oval disks, others are rod-like, some are irregular. The *coccoliths* have been imperfectly described, both by Professor Huxley in his original paper and by Mr. Sorby. They include two distinct kinds of bodies, now called *Discolithus* and *Cyatholithus*; these are described in detail and figured. The *coccospheres* are also of two types—the one compact, the other loose in texture.

Bathybius.

Professor Huxley conceives that the granule-heaps and the transparent gelatinous matter from the bottom of the Atlantic represent masses of protoplasm, which, he thinks, may be regarded as a new form of Häckel's Monera. He gives to this Moner the generic name *Bathybius*, and calls it *B. häckelii*. He is led to believe that the Discolithi and the Cyatholithi stand in the same relation to *Bathybius* as the spicules of Sponges or of Radiolaria do to the soft parts of those animals. It is very probable that the coccospheres are in some way or other closely connected with the cyatholiths. Quart. Journ. Micr. Science, 1868, vol. xvi. pp. 202–212.

Psorospermeæ. Ratzel (*l. c.* p. 154) gives an account of some *Psorospermeæ* met with in the muscles of a species of *Inuus*.

Häckel (*l. c.*) thus arranges his new subkingdom

PROTISTA.

Organisms reproducing themselves exclusively in a *non*-sexual manner, by monogeny.

Group I. Monera.
1. Gymnomonera. } *Vide* below for details of genera &c.
2. Lepomonera. }

Group II. Flagellata.
1. Nudiflagellata (*Euglena, Spondylomorum*, &c.).
2. Cilioflagellata (*Peridinium, Ceratium*, &c.).

Group III. Labyrinthulea.

Group IV. Diatomea.

Group V. Phycochromacea.
1. Chroococcacea (*Glœocapsa, Merismopædia*, &c.).
2. Oscillarinea (*Nostochacea, Rivulariacea*, &c.).

Group VI. Fungi.
Group VII. Myxomycetes.
Group VIII. Protoplasta (*Amœboida*).
1. Gymnamœbæ (*Autamœba, Nuclearia,* &c.).
2. Lepamœbæ (*Arcella, Difflugia,* &c.).
3. Gregarinæ (*Monocystida* and *Polycystida*).
Group IX. Noctilucæ.
Group X. Rhizopoda.
1. Acyttaria (*Monothalamia* and *Polythalamia*).
2. Heliozoa (*Actinosphærium*).
3. Radiolaria (*Monocyttaria* and *Polycyttaria*).

Monera. Organisms without organs, which form, in the fully developed state, a freely moving, perfectly structureless, homogeneous mass of naked sarcode. Nuclei never differentiated. Locomotion is effected by pseudopodia, varying in form, which either remain simple or ramify and anastomose. Nutrition is effected generally after the manner of the Rhizopods. Reproduction is effected solely in a non-sexual manner (monogeny). Often, but not always, the freely moving condition alternates with a state of rest, during which the organism is surrounded by a structureless excreted covering. All Monera live in water.

Gymnomonera. Monera without a quiescent stage, naked.

Genus 1. *Protamœba*, Häckel, *l. c.* p. 130. Simple, shapeless body of protoplasm; no vacuoles; pseudopods simple, neither ramifying nor anastomosing. Reproduction by fission. *P. primitiva*, Häckel, Gen. Morph. 1866, i. p. 133, and *l. c.* p. 130, pl. 3. figs. 25–30, fresh water, Tautenberg Forest, Jena.

Genus 2. *Protogenes*, Häckel, Zeitschr. für wissensch. Zool. 1865, xv. p. 360, and *l. c.* p. 130. As *Protamœba*, but pseudopods ramifying and anastomosing. *P. primordialis*, ibid. p. 360, pl. 26. figs. 1, 2, and *l. c.* p. 131, Mediterranean, near Nice.

Genus 3. *Myxodictyum*, g. n., Häckel, *l. c.* p. 131. Consisting of several simple, shapeless bodies of protoplasm; no vacuoles; pseudopods ramifying and anastomosing. Through the anastomosing of the pseudopods of the different bodies a net-like structure is formed. Reproduction probably by fission and by the detachment of single forms, these giving rise to new colonies? *M. sociale*, sp. n., Häckel, *l. c.* p. 131, pl. 3. figs. 31–33, Algesiras Bay, Gibraltar.

Lepomonera. Monera having a quiescent stage, covered, the locomotive stage alternating with or ending in the quiescent stage.

Genus 4. *Protomonas*, Häckel, *l. c.* p. 131. Body of protoplasm simple, shapeless; no vacuoles; pseudopods simple or ramifying. Reproduction by zoospores, which combine into plasmodia. *P. amyli*, Häckel (= *Monas amyli*, Cienkowski, Archiv f. mikrosk. Anat. i. p. 165, pl. 12. figs. 1–5), *l. c.* p. 132, decaying *Nitella*, Germany and Russia.

Genus 5. *Protomyxa*, g. n., Häckel, *l. c.* p. 132. Generic characters as in *Protomonas*, but body containing vacuoles. *P. aurantiaca*, sp. n., Hæckel, *l. c.* p. 132, pl. 2. figs. 1–12, on empty shells of *Spirula peronii*, Lanzarote.

Genus 6. *Vampyrella*, Cienkowski. *V. spirogyræ*, C., *V. pendula*, C., and *V. vorax*, C., all in fresh water.

Genus 7. *Myxastrum*, g. n., Häckel, *l. c.* p. 134. Protoplasm body simple,

shapeless; no vacuoles; pseudopods simple, but often ramifying and anastomosing. Reproduction by radial fission. The encapsuled resting body splits into a large number of ray-like spores with siliceous shells. Germs, on escaping from these, assume at once the appearance of the full-grown organism. *M. radians*, sp. n., Häckel, *l. c.* p. 134, pl. 3. figs. 13–24, Puerto del Arrecife, Lanzarote.

END OF THE FIFTH VOLUME.

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