THE

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1867.

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EDITED BY

ALBERT C. L. G. GÜNTHER,

M.A., M.D., PH.D., F.R.S., F.Z.S., ETC. ETC.



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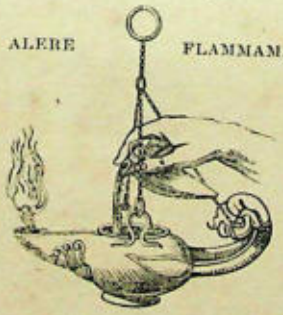
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PREFACE.

The fourth volume of the 'Record' forms a systematic guide-book to about 36,400 pages* of the zoological literature published (with the exception of a very small part) within the year 1867. This number has never been reached in any preceding year, and corresponds to an increase in the number of authors; an unusually great activity appears to have prevailed in the study of Mammals, Birds, Mollusks, Neuroptera, and Orthoptera.

It has frequently been suggested that the annual volume of the 'Record' should be divided into several parts, in order to facilitate to specialists the acquisition of the reports on their own branches. The Editor, therefore, considered it his duty to propose to the publisher a division into three sections, viz. that of Vertebrates, of Entomology, and of Mollusks, Crustaceans, and Lower Animals. Although this arrangement interferes with the systematic succession of the Classes of Animals, it appeared to be practically the most advisable. The integrity of the volume is preserved by adhering, in all three parts, to the same plan which has been followed hitherto, and by keeping a continuous pagination.

Mr. Spence Bate (who, residing at a great distance from scientific libraries, found access to the literature very difficult) has resigned his place among the contributors, and Dr. von Martens has consented to be his successor.

* This number is divided between the various classes thus:—Mammals 4030, Birds 8340, Reptiles 710, Fishes 1180, Mollusks and Molluscoids 6260, Crustaceans 470, Arachnids and Myriopods 540, Insects 13,000 (viz. Coleoptera 3300, Hymenoptera 1100, Lepidoptera 2900, Diptera 700, Neuroptera and Orthoptera 1100, Rhynchota 900), Annelids 290, Scolecides 370, Echinoderms 350, Coelenterates 70, Protozoa 770.

The Editor and Contributors of the 'Record' feel much gratified at the interest with which the question of its continuance was taken up by the Biological Section of the British Association, whereby a grant of £100 was obtained from the Association for this volume as well as the following. This, together with a similar sacrifice on the part of the Contributors, has ensured the continuation of the 'Record;' but it is to be hoped that by the arrangement of issuing the volume in three parts, the undertaking will now be self-supporting.

ALBERT GÜNTHER.

London, November 1868.

[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. *Works in progress.*

MARTENS, E. VON. Die Preussische Expedition nach Ost Asien. Nach amtlichen Quellen. Zoologische Abtheilung. Erster Band. Erste Hälfte. Berlin, 1865 (actually published in 1867). 8vo, pp. 192.

[The Prussian Expedition to East Asia. . From official sources. Zoological Part. First volume. First half.]

The author was attached as zoologist to the Prussian expedition to Eastern Asia, which left Europe in the spring of 1860. In the part before us he gives in a connected form the zoological observations made by him during the progress of the expedition, and enlarged by information contained in the preceding literature. Thus we obtain sketches of the zoological characters of the countries visited, extremely well written, and with such a general zoological knowledge as we rarely meet with in authors of the present period of specialities. Separate chapters are devoted to Madeira, the tropical part of the Atlantic Ocean, Rio Janeiro, the Southern Atlantic, the Sunda Straits, the Chinese Sea, Japan, Shanghai, Tamsui (Formosa), Hongkong, Canton, Macao, and the Philippine Islands. It does not appear to have been in the plan of the author to enter into specialities of the several faunas, except of Japan and China, in which countries the expedition stayed long enough to enable him to make a series

of original researches, not only into their fauna, but also into their zoological literature, which, at least as far as the Japanese portion is concerned, may be compared to the works of Rondelet, Belon, Gesner, and Wotton.

The second half of this work may be expected to appear in the course of 1868.

Recherches sur la Faune de Madagascar et de ses dépendances. D'après les découvertes de MM. François P. L. Pollen et D. C. Van Dam. Mammifères et Oiseaux par H. Schlegel et François P. L. Pollen. 1re livraison. Leyde, 1867. 4to.

The object of this work is to give descriptions and figures of the new or more important species of mammals and birds collected by the travellers mentioned; a critical synopsis of all the species known to belong to the Madagascar fauna will be added. It is intended to publish this work in four parts, each containing 48 pages of letterpress and 10 plates, most of which are coloured. The first part appeared in the year 1867 (pp. 1–29 and four plates); it contains the mammalian portion, which will be subsequently mentioned in the special part of this Record. The papers by Prof. Schlegel, mentioned in 'Record,' ii. p. 23, and iii. p. 14, were preliminary to, and are embodied in, this work.

Pollen, F. P. L. Contributions à l'Histoire naturelle des Lémuriens d'après les découvertes et observations de différents Voyageurs-Naturalistes. Leide, 1867. Imper. fol.

The author intends to publish a magnificent work containing descriptions and full-sized coloured figures of all the Lemurides known, with an osteological plate at the end of each division. One part, as a specimen of the work, has been published, containing the description and figure of *Microcebus coquereli*; and it is intended to publish the parts monthly. M. Pollen has specially qualified himself, by his travels and long-continued study of these animals, for this undertaking; and we trust that he will be readily supported by all zoologists.

Altum, B. Fauna der Wirbelthiere des Münsterlandes in ihren Lebensverhältnissen nach selbstständigen Beobachtungen und Erfahrungen dargestellt. I. Säugethiere. Münster, 1867. 8vo.

The author, well known as a very accurate observer and untiring naturalist, has begun to publish an account of the Vertebrata of the Münsterland, a district of Westphalia, the part before us treating of the Mammalia. Although the work is chiefly of local interest, it is rendered valuable to all naturalists by the numerous original observations on the habits of the animals described. The Münsterland is inhabited by forty-four mammals: viz. 12 Bats, 7 Insectivora, 9 Carnivora, 13 Rodents, 2 Ruminants, and 1 Pachyderm.

B. *Separate Publications.*

Rütimeyer, L. Ueber die Herkunft unserer Thierwelt. Eine zoogeographische Skizze. Mit einem Verzeichniss der fossilen und lebenden schweizerischen Säugethiere und einer Karte zur Andeutung der Geschichte der Thierverbreitung im Allgemeinen. Basel & Genf, 1867. 4to, pp. 57.

[On the origin of the recent fauna. A zoogeographical sketch. With a list of the fossil and living Mammalia of Switzerland, and a map indicating the history of the dispersal of animals generally.]

In this essay the author treats of a number of facts and observations illustrative of the immense changes which must have taken place in the distribution of land and water on the earth's surface, and which were accompanied by corresponding changes in the distribution of animals, in their life and organization. The fauna of each geological period is the daughter of the next preceding, although the region inhabited by the one may frequently have been different and distant from that occupied by the other. It is the task of the zoologists and palæontologists of the present age to discover the relations of those faunas, critically to examine natural families and genera, and to define their palæontological as well as geographical limits.

Tristram, H. B. The Natural History of the Bible: being a review of the physical geography, geology, and meteorology of the Holy Land; with a description of every animal and plant mentioned in Holy Scripture. London, 1867. 16mo, pp. 516, with numerous woodcuts.

This work has been published under the direction of the Committee of general literature and education appointed by the Society for promoting Christian Knowledge. The object of the writer is to identify and illustrate every animal and plant mentioned in Holy Scripture in a manner which shall be satisfactory both to the Biblical critic and to the student of natural history. With this object, a method more popular than strictly scientific has been followed. After introductory chapters on the physical geography, geology, and meteorology of the Holy Land, a large portion of the work is devoted to the mammals, which are reviewed in alphabetical order, according to their trivial names. The Hebrew words are given in each case, and compared with their Arabic synonyms and with the Greek Septuagint, and the reasons set forth for the identification of each name. Every passage in the Bible in which the word occurs is either quoted or referred to, and, when necessary, illustrated or explained. A brief account of the natural history of the species follows, together with the mention of its geographical range. About 50 mammals are mentioned by name in the sacred writings. The plan of the work precluded the systematic enumeration of the species inha-

biting Palestine, except so far as the genus or group is alluded to in Scripture.

The Reptiles are treated in the same manner; and considerable pains have been taken to examine the seven Hebrew words applied to various species of the ophidian order, and to identify each with existing species of the country.

As no fishes are specifically named in the Bible, the allusions to the subjects of fish and fishing are classified under 30 heads, and each passage examined, with merely an enumeration of some of the more remarkable forms.

The student of natural history will find in the work an examination of all the facts of natural history known to or recorded by the ancient Hebrews, and a comparison of their knowledge with the researches of modern science, while the Biblical student will find every name occurring in the Hebrew text explained, and every allusion illustrated which bears on natural history, with a copious index of many hundred texts referred to. False translations of our version are corrected, and unknown names, as "behemoth," "leviathan," "pygarg," and fabulous creatures, as "satyr," "unicorn," are definitely assigned to ascertained creatures of the country either existing or extinct.

Although accounts of Biblical natural history have been attempted by previous writers in this country as well as on the Continent, none can be compared to this admirable work of Mr. Tristram, as regards either its completeness or the knowledge of the author, who, as is well known, has made a most successful expedition into the Holy Land, and brought together the most extensive collections which ever reached Europe. We understand that already a second edition is in course of preparation.

Fatio, V. Les Campagnols du Bassin du Léman. Bâle et Genève, 1867. 8vo, pp. 78, with six coloured plates.

This little but well-executed work on the Field-mice of Geneva is published by the Association Zoologique du Léman.

Jeitteles, L. H. Ueber einige seltene und wenig bekannte Säugethiere des südöstlichen Deutschlands. Separat-Abdruck aus dem vierten Programm der n. ö. Landes-Oberrealschule zu St. Pölten. St. Pölten, 1867. 8vo, pp. 36.

[On some rare and little-known mammals of South-eastern Germany.]

Bischoff, Th. L. Ueber die Verschiedenheit in der Schädelbildung des Gorilla, Chimpansé und Orang-Outang, vorzüglich nach Geschlecht und Alter, nebst einer Bemerkung über die Darwin'sche Theorie. München, 1867. 4to, pp. 94, with 22 plates.

[On the differences of structure in the skulls of the Gorilla, Chimpanzee, and Orang-Outang, chiefly those of sex and age, with remarks on Darwin's doctrine.]

The principal object and contents of this work will be mentioned in the special part of our 'Record.' The concluding chapter is directed against the principles adopted by Darwin and his adherents on the question of the origin of species.

GRATIOLET, L. P. Recherches sur l'anatomie de l'Hippopotame, publiées par les soins du Docteur EDMOND ALIX. Paris, 1867. 4to, pp. 405, with 12 plates.

Gratiolet left behind him a manuscript containing the detailed account of his researches into the anatomy of a Hippopotamus which had died shortly after its birth. We are indebted to Dr. Alix not only for the publication of this manuscript, but also for completing some portions, as the myology of the hind limb, the anatomy of the organs of generation, &c., by his own examination of another example which died at about the same age.

MALM, A. W. Några Blad om Hvaldjur i allmänhet och *Balænoptera carolinæ* isynnerhet. Göteborg, 1866. 16mo, pp. 20.

——. Monographie illustrée du Baleinoptère trouvé le 22 Octobre 1865 sur la côte occidentale de Suède. Stockholm, 1867, fol. pp. 110. Avec 13 planches contenant 29 photographies; 2 planches lithographiées et 3 gravures en bois dans le texte.

The author became the proprietor of a whale, 55 feet long, which was thrown ashore on the western coast of Sweden; he took great care to preserve an accurate account of it by drawing up detailed descriptions and preparing photographs of the specimen in its fresh state as well as after he had succeeded in mounting its skin and skeleton. He has also paid some attention to the principal parts of its internal anatomy. Finding some slight discrepancies from the European species known, he considered it to be an unknown species, which he named "Malmska Hvalen" or *Balænoptera carolinæ*; however, zoologists specially acquainted with whales regard it as a *Physalus sibbaldii*. The first of the two publications referred to contains merely a preliminary notice of it. In the publication of the second work the author was liberally supported by his Government, and thus enabled to bring it out in a magnificent style. It contains a most detailed account of all the circumstances connected with the preparation of the specimen, of its external appearance, skeleton, etc.

TENNENT, Sir J. E. The wild Elephant and the method of capturing and taming it in Ceylon. London, 1867. 16mo, pp. 198, with woodcuts.

The greater portion of this volume is a reprint of the chapters on the Elephant which appeared in the author's previous larger works on Ceylon, with the addition of further information on the natural history of this animal.

C. *Zoological Papers published in Journals.*

Bate, C. Sp. On the dentition of the common Mole (*Talpa europæa*). Ann. & Mag. Nat. Hist. 1867, xix. pp. 377–381, with a plate, and Trans. Odontolog. Soc. 1867, v. pp. 261–294, with six plates.

Bey, A. F. (See Senoner, A.)

Blyth, E. Notes upon three Asiatic species of Deer. Proc. Zool. Soc. 1867, pp. 835–842, with numerous woodcuts.

Brandt, J. F. Bericht über eine Arbeit unter dem Titel: Zoographische und palæontologische Beiträge. Bull. Ac. Sc. St. Pétersb. x. pp. 502–507.

Prof. Brandt gives here an abstract of a treatise which will be published by him in 'Schriften der K. mineralog. Gesellsch. zu St. Petersburg,' vol. ii., and which has not yet been received in this country; it is entitled "Zoographical and Palæontological Contributions," and contains the author's researches into the geographical distribution of *Cervus tarandus*, *Bos urus*, and *Bos bison* in ancient and historical times. He agrees with Rütimeyer in regarding *Bos priscus*, *latifrons*, *antiquus*, *Bison europæus* and *americanus* merely as stages of development of one and the same species. He enters into detailed researches into the etymology and meaning of the words *Ur*, *Tur*, *Bison*, *Wisent*, &c., and finally reviews critically Lartet's and Garrigou's labours on the prehistoric faunæ.

——. Ergänzende Mittheilungen zur Erläuterung der ehemaligen Verbreitung und Vertilgung der Steller'schen Seekuh. Ibid. xi. 1867, pp. 445–451.

[Additional remarks illustrative of the former distribution and extinction of *Rhytina stelleri*.]

Burmeister, H. Einige Bemerkungen über die Cetaceen im Museo publico de Buenos Aires. Zeitschr. gesammt. Ntrwiss. 1867, xxix. pp. 1–12. Additions to this paper, pp. 402–418.

——. Preliminary observations on the Anatomy of *Pontoporia blainvillii*. Proc. Zool. Soc. 1867, pp. 484–489, with two woodcuts.

The author intends to publish a more detailed and illustrated account in 'Anales del Museo de Buenos Aires.'

——. Preliminary description of a new species of Finner Whale (*Balænoptera bonaërensis*). Ibid. pp. 707–713, with woodcuts.

Coues, E. The Quadrupeds of Arizona. Americ. Natur. i. 1867, pp. 281–292, 351–363, 393–400, 531–541.

——. Notes on a collection of Mammals from Arizona. Proc. Ac. Nat. Sc. Philad. 1867, pp. 133–136.

Dawkins, W. B. *Ovibos moschatus* (Blainville). Proc. Roy. Soc. 1867, pp. 516–517 (abstract).

Edwards, A. Milne-. Mémoire sur le type d'une nouvelle famille de l'ordre des Rongeurs. [*Lophiomys.*] Nouv. Arch. Mus. iii. pp. 81–118, with five plates. (Abstract in Compt. Rend. 1867, April 22, pp. 812–815, Ann. Sc. Nat. 1867, vii. pp. 113–121.)

—— et Grandidier, A. Observations anatomiques sur quelques Mammifères de Madagascar. 1re article. De l'organisation du *Cryptoprocta ferox*. Ann. Sc. Nat. 1867, vii. pp. 314–338, with four plates.

——. Note sur une nouvelle espèce du genre Nycticèbe provenant de Siam et de Cochinchine. Ibid. pp. 161–164, and Nouv. Arch. Mus. Bull. iii. pp. 9–13, with a plate. [*Nycticebus cinereus.*]

——. Observations sur quelques Mammifères du Nord de la Chine. Ann. Sc. Nat. 1867, vii. pp. 375–377.

This is an abstract of a paper which will appear in the Nouv. Arch. d'Hist. Nat. The new species indicated will be mentioned below.

——. Description de quelques espèces nouvelles d'Ecureuils de l'ancien continent. Rev. et Mag. Zool. 1867, pp. 193–197, 225–232, with a plate.

Fischer, P. Mémoire sur les Cétacés du genre *Ziphius*, Cuv. Nouv. Arch. du Muséum, iii. 1867, pp. 41–78, with a plate.

Fitzinger, L. J. Untersuchungen über die Abstammung des Hundes. Sitzgsber. Ak. Wiss. Wien, 1867 (1866), liv. pp. 396–457. [Researches on the origin of the Dog.]

——. Die Racen des zahmen Hundes. Ibid. 1867, lvi. pp. 377–507, 514–585, 776–823. [The races of the domestic dog.]

——. Versuch einer natürlichen Anordnung der Nagethiere (*Rodentia*). Ibid. lv. pp. 453–515, lvi. pp. 57–168. [Attempt at a natural arrangement of Rodents.]

——. Die natürliche Familie der Igel (*Erinacei*) nach dem gegenwärtigen Stande der Wissenschaft. Ibid. lvi. pp. 811–890. [The natural family of *Erinacei* described according to the present state of science.]

——. Ueber die natürliche Familie der Rohrrüssler (*Macroscelides*) und die derselben angehörigen Arten. Ibid. pp. 914–941.

——. (See also Heuglin, Th. v.)

Flower, W. H. On the development and succession of the teeth in the Marsupialia. Philos. Trans. vol. clvii. 1868, pp. 631–641, with two plates. Abstract in Proc. Roy. Soc. vol. xv. 1867, pp. 464–468, and in Ann. & Mag. Nat. Hist. 1867, xx. pp. 129–133.

Flower, W. H. Description of the skeleton of *Inia geoffrensis* and of the skull of *Pontoporia blainvillii*, with remarks on the systematic position of these animals in the order Cetacea. Trans. Zool. Soc. vi. 1867, pp. 87–116, with four plates.

Frauenfeld, G. von. Beiträge zur Fauna der Nikobaren. Verh. zool.-bot. Ges. Wien, 1867, pp. 591–598.

The author mentions 8 mammals, 34 birds, 12 reptiles, and 33 fishes collected by the naturalists of the 'Novara' expedition.

Fritsch, K. Kalender der Fauna von Oestreich. Sitzgsber. Ak. Wiss. Wien, 1867, lv. pp. 201–238.

[Zoological Almanack of Austria.]

A section of the Meteorological Institution of Austria has undertaken the task of making botanical and zoological observations in the various parts of the empire. They have engaged men conversant with the subject, on nearly a hundred stations, to report regularly on the seasonal phenomena. Some of these observations have been continued for more than twenty years. Hr. Fritsch gives now a *résumé*, containing notes on 872 animals. The average dates are given on which each of the hybernating mammals commences and terminates its sleep during the winter. As may be expected, the dates differ considerably in different parts of the empire.

Gilpin, G. B. On the Mammalia of Nova Scotia. No. III. Proc. & Trans. Nov. Scot. Inst. Nat. Sc. 1867, pp. 8–16. [*Mustelidæ*; see Zool. Record, ii. p. 7.]

Grandidier, A. Mammifères et Oiseaux nouveaux découverts à Madagascar. Rev. et Mag. Zool. 1867, pp. 84–85.

Four mammals are characterized as new.

——. Notes sur les mammifères observés à Madagascar de 1865 à 1867. Ibid. pp. 313–318.

——. (See Edwards, A. Milne-.)

Gray, J. E. Notes on the skulls of Hares (*Leporidæ*) and Picas (*Lagomyidæ*) in the British Museum. Ann. & Mag. Nat. Hist. 1867, xx. pp. 219–225.

——. Synopsis of the Asiatic Squirrels (*Sciuridæ*) in the Collection of the British Museum, describing one new genus and some new species. Ibid. pp. 270–286.

——. Synopsis of the African Squirrels (*Sciuridæ*) in the Collection of the British Museum. Ibid. pp. 323–334.

——. Synopsis of the species of American Squirrels in the Collection of the British Museum. Ibid. pp. 415–434.

——. Synopsis of the species of Burrowing Squirrels (*Tamias*) in the British Museum. Ibid. pp. 434–436.

Gray, J. E. Notes on the skulls of the Cats (*Felidæ*). Proc. Zool. Soc. 1867, pp. 258–277, with woodcuts.

——. Notes on certain species of Cats in the Collection of the British Museum. Ibid. pp. 394–405, with two plates; and pp. 874–876.

——. Notes on the variegated or yellow-tailed Rats of Australasia. Ibid. pp. 597–600.

——. Notice of a new species of American Tapir, with observations on the skulls of *Tapirus*, *Rhinochœrus*, and *Elasmognathus* in the Collection of the British Museum. Ibid. pp. 876–886, with a plate and woodcuts.

——. Observations on the preserved specimens and skeletons of the *Rhinocerotidæ* in the Collection of the British Museum and Royal College of Surgeons, including the descriptions of three new species. Ibid. pp. 1003–1032, with six woodcuts.

Hartmann, R. Versuch einer systematischen Aufzählung der von den alten Aegyptern bildlich dargestellten Thiere mit Rücksicht auf die heutige Fauna des Nilgebietes. Lepsius und Brugsch, Zeitschrift für ägyptische Sprache und Alterthumskunde, ii. pp. 7–12, 19–28.

[Attempt at a systematic enumeration of the figures of animals represented by the ancient Egyptians, with regard to the present fauna of the Nile countries.]

We shall subsequently refer to the details of this paper, important to the zoologist as well as the archæologist. The present part contains the mammals only.

Hensel, R. Beiträge zur Kenntniss der Thierwelt Brasiliens. Zoolog. Gart. 1867, pp. 290–293, 361–374.

The author, who for several years has been engaged in the exploration of the fauna of southern Brazil, has commenced to give some of his observations on the Mammalia in a series of articles in the journal quoted. Two only have been published during the last year; but they are so full of interest and information that we hope the author will continue them at shorter intervals. He directs attention to the fact that the climate of southern Brazil is similar to that of southern Europe, that nevertheless a number of tropical species (*Mycetes seniculus*, *Cebus fatuellus*, &c.) are found there, and that the mortality in the zoological gardens of Europe would be considerably lessened if individuals were imported from these temperate districts, instead of from the hottest parts of Brazil.

Heuglin, Th. v. Systematische Uebersicht der Säugethiere Nordost-Afrika's mit Einschluss der arabischen Küste, des rothen Meers, der Somali- und der Nilquellen-Länder,

südwärts bis zum vierten Grade nördlicher Breite. Nach brieflichen Mittheilungen und den Original-Exemplaren des Herrn Verfassers ergänzt und mit Zusätzen versehen, von Dr. Leopold Joseph Fitzinger. Sitzgsber. Ak. Wiss. Wien, 1867 (1866), liv. pp. 537–611.

[Systematic Synopsis of the Mammals of North-eastern Africa, including the coasts of Arabia and Red Sea, and the Somáli and Upper Nile countries, southwards to lat. 4° N., with supplements and additions, from letters and original specimens of the author, by L. J. F.]

Hutton, T. On the geographical range of *Semnopithecus entellus*. Proc. Zool. Soc. 1867, pp. 944–952.

Jessen, C. *Alberti Magni historia animalium*. Wiegm. Arch. 1867, i. pp. 95–105.

Dr. Jessen's notes, on Albert the Great and various editions of his History of Animals, are full of interest; he vindicates the originality of the author. The original manuscript is still preserved in the library of the city of Cologne.

Krefft, G. Notes on the Mammals and Birds of Cape York, with descriptions of two new Rodents of the genus *Hapalotis*. Proc. Zool. Soc. 1867, pp. 316–319, with woodcuts.

Lilljeborg, W. On two subfossil Whales discovered in Sweden. Nov. Act. Soc. Sc. Upsal. ser. 3. vol. vi. 1867, pp. 48, with eleven plates. [*Eschrichtius robustus* and *Hunterius swedenborgii*.]

This memoir is written in English; and we hope that the author's choice of a more generally understood language will be adopted by other fellow labourers in the north of Europe, Latin, even of the worst kind of modernization, being but little adapted for works of modern science.

M'Coy, F. On the recent zoology and palæontology of Victoria. Ann. & Mag. Nat. Hist. 1867, xx. pp. 175–202.

Brief notes drawn up for the Intercolonial Exhibition in Melbourne, and referring "to those species of animals affording economically useful materials, or of some special present interest in relation to unsettled scientific questions." As these notes were intended for a popular temporary purpose, they are neither complete, nor do they contain many original researches. Some errors have been pointed out by Mr. Krefft, Proc. Zool. Soc. 1868, pp. 2–4.

——. On the species of Wombats. Trans. & Proc. R. Soc. Victoria, part 2, vol. viii. pp. 266–270.

——. On a new genus of Phalanger (*Gymnobelideus*). Ann. & Mag. Nat. Hist. 1867, xx. pp. 287–288, with a plate.

Mivart, St. G. Notes on the osteology of the Insectivora. Journ. of Anat. & Physiol. 1867, 1st ser. pp. 281–313; 2nd ser. i. pp. 117–154, with numerous woodcuts. (Translated in Ann. Sc. Nat. 1867, viii. p. 221.)

——. On the skull of *Indris diadema*. Proc. Zool. Soc. 1867, pp. 247–256, pl. 18.

——. Additional notes on the osteology of the *Lemuridæ*. Ibid. pp. 960–975, with woodcuts.

Murie, J. Remarks on an Antelope from the White Nile, allied to, or identical with, the *Kobus sing-sing* of Gray. Proc. Zool. Soc. 1867, pp. 3–8, with a plate.

——. On the Platyrhine Wombat (*Phascolomys platyrhinus*). Ibid. pp. 798–815, with a plate.

Peters, W. Ueber eine Sammlung von Flederthieren und Amphibien aus Otjimbingue in Südwest Africa. Monatsberichte Akad. Wiss. Berlin, 1867, pp. 234–237, with a plate.

——. Ueber die Flederhunde (*Pteropi*), und insbesondere über die Arten der Gattung *Pteropus* s. s. Ibid. pp. 320–333; Schluss, 865–872.

——. Ueber die zu den Gattungen *Mimon* und *Saccopteryx* gehörigen Flederthiere. Ibid. pp. 469–481, with a plate.

Pucheran, —. Sur les indications que peut fournir la Géologie pour l'explication des différences que présentent les faunes actuelles. Rev. et Mag. Zool. 1867, pp. 161–169, 197–199, 257–271. (Conclusion, see Zool. Record, ii. pp. 10 & 58, iii. pp. 11, 13.)

Rolleston, G. On the Domestic Cats, *Felis domesticus* and *Mustela foina*, of ancient and modern times. Journ. of Anat. & Physiol. 1867, i. pp. 47–61.

Rütimeyer, L. Beiträge zur paläontologischen Geschichte der Wiederkäuer. Mittheil. ntrf. Ges. Basel, iv. p. 2.
[Contributions to the palæontology of the Ruminants.]

——. Ueber Art und Rasse des zahmen europæischen Rindes. Arch. f. Anthropologie, 1866, pp. 219–250, with woodcuts.
[On the species and races of the Domestic European Cattle.]

——. Versuch einer Naturgeschichte des Rindes unter dem Gesichtspunkte seiner Beziehungen zu den Wiederkäuern überhaupt betrachtet. Mém. Soc. Helvét. Sc. Nat. xxii. 1867.
[Essay of a natural history of Domestic Cattle viewed in their relations to the Ruminants generally. See p. 35.]

Sanson, A. Des types naturels en zoologie. Robin, Journ. Anat. et Phys. 1867, pp. 337–381.

Schmidt, M. Zoologisches aus der Frankfurter Chronik. Zool. Gart. 1867, pp. 429–434.

See 'Zool. Record,' iii. p. 11. These notices are concluded by the present communication.

——. Der grossohrige Beuteldachs, *Perameles* (*Macrotis*) *lagotis* (Reid). Ibid. pp. 1–12, 41–56, 81–92, with a plate.

Senoner, A. Die Hausthiere Egyptens. Zoolog. Gart. 1867, pp. 293–299.

A short popular treatise on the domestic animals of Egypt, compiled from 'Studii scientifici sull' Egitto e sue adjacenze compresa la penisola dell' Arabia petrea' del Dr. A. Figari Bey. Lucca, 1864–65 (vol. ii. p. 17).

Slack, J. H. Mammalogical notices. Proc. Ac. Nat. Sc. Philad. 1867, pp. 34–38, with a plate.

Smith, J. A. Notes of several recent contributions to the Zoology of Old Calabar. Proc. R. Phys. Soc. Edinb. 1864–65, pp. 303–308. [*Galago demidoffii.*]

Stricker, W. Zur naturgeschichtlichen Statistik der in Pommern ausgerotteten Säugethiere. Zoolog. Gart. 1867, pp. 306–309.

[Contribution to the statistics regarding the mammals of Pommerania which have become extinct.]

D. *Anatomical Publications.*

Allen, H. On some features in the conformation of the Mammalian Skull. Proc. Ac. Nat. Sc. Philad. 1867, pp. 11–13.

Arloing, S. Contribution à l'étude de l'organisation du pied chez le cheval. An. Sc. Nat. 1867, viii. pp. 55–81, with two plates.

Beger, H. Zur vergleichenden Anatomie der Wasserratte und Feldmaus, *Arvicola amphibius* und *arvalis*. Zeitschr. ges. Ntrwiss. 1867, xxx. pp. 145–184.

[Contribution to the comparative anatomy of *A.*]

Claudius, M. Das Gehörorgan von *Rhytina stelleri*. Mém. Ac. Sc. St. Pétersb. 1867, xi. no. 5. pp. 14, with two plates.

Crisp, E. On some points connected with the Anatomy of the *Hippopotamus*. Proc. Zool. Soc. 1867, pp. 601–612, with woodcuts. On the form, size, and structure of the Viscera of the *Hippopotamus*, as compared with the same parts in the members of the Pachyderm family and in some other animals. Ibid. pp. 689–695.

Eberth, C. J. Untersuchungen über die Leber der Wirbelthiere. Arch. microsc. Anat. 1867, pp. 423–440, with a plate.

[Researches into the structure of the Liver of Vertebrates].

Fischer, —. Note sur une déformation pathologique de la mâchoire inférieure du Cachalot. Robin, Journ. Anat. et Phys. 1867, pp. 382–388, pl. 13.

Flower, W. H. Notes on the visceral anatomy of *Hyomoschus aquaticus*. Proc. Zool. Soc. 1867, pp. 954–960, with two woodcuts.

Friedlowsky, A. Ein Fall von Fehlen des Schweifes, sowie der After- und Urogenitalöffnung an einem Hunde, nebst einem Anhange über Wirbelassimilation. Verhandl. zool.-bot. Ges. Wien, 1867, pp. 521–526.

The author describes a case of monstrosity of a dog, in which tail, vent, and urogenital opening were wanting. He mentions also a case of "assimilation of vertebræ." See Hyrtl's paper, Zool. Record, i. p. 104.

Goubaux, A. Observations diverses sur l'os pubis chez le cheval. Robin, Journ. Anat. et Phys. 1867, pp. 238–248.

Grandry, M. Mémoire sur la structure de la capsule surrénale de l'homme et de quelques animaux. Robin, Journ. Anat. et Phys. 1867, pp. 225–237, 389–409, with five plates.

Gruber, W. Halsrippe bei *Canis familiaris*. Reichert und Du Bois Reym. Arch. Anat. etc. 1867, pp. 542–546, with a figure.

Gulliver, G. On the coloured corpuscles of the blood of pyrenæmatous and apyrenæmatous Vertebrates. Journ. of Anat. & Physiol. 1867, i. pp. 1–7.

Haughton, S. Notes on Animal Mechanics, Nos. VI.–XVIII. Proc. R. Irish Acad. vol. ix. part 3, 1866, pp. 267–294, and part 4, 1867, pp. 469–526, with woodcuts.

These notes were commenced in 1865, see 'Zool. Record,' ii. p. 15. The present continuation refers to the myology of *Macacus nemestrinus, Cercopithecus, Cynocephalus, Crocodile, Marsupials, Emu, Rhea, Irish Terrier, Dingo, Badger, Virginian Bear, Otter, Rhinoceros,* and some *Ruminants*.

——. On some points in the muscular anatomy of the Marsupials. Ann. & Mag. Nat. Hist. 1867, xix. pp. 127–131.

Hering, E. Ueber den Bau der Wirbelthier-Leber. Sitzgsber. Ak. Wiss. Wien, liv. pp. 496–515, with a plate. (Zweite Mittheilung.)

[On the structure of the Liver of Vertebrates. Second part, see 'Zool. Record,' iii. p. 12.]

Hulke, J. W. Notes on the anatomy of the Retina of the common Porpoise (*Phocæna communis*). Journ. of Anat. & Physiol. 1867, i. pp. 19–25, with a plate.

Humphry, G. M. On some points in the anatomy of the Chimpanzee. Journ. of Anat. & Physiol. 1867, i. pp. 254–268, with a plate.

Jäckel, A. J. Beiträge zu der Lehre von der thierischen anomalen Mannweiblichkeit. Abhandl. ntrhist. Gesellsch. Nürnberg, iii. 1866, pp. 240–268.

[Contributions to the knowledge of anomalous hermaphroditism in animals.]

Koster, W. Sur la signification morphologique de l'os occipital et des deux vertèbres cervicales supérieures. Arch. Néerland. 1866, livr. 4. Abstract in Ann. Sc. Nat. 1867, vii. p. 122.

Luce, G. Ueber die Zeugungswege des weiblichen Känguruhs. Zool. Gart. 1867, pp. 418–424, 471–474.

[On the female genital organs of *Halmaturus*.]

Macalister, A. On some points in the anatomy of *Globiocephalus svineval* (Gray). Proc. Zool. Soc. 1867, pp. 477–482.

Mivart, St. G. Contributions towards a more complete knowledge of the skeleton of the Primates. Part I. The appendicular skeleton of *Simia*. Trans. Zool. Soc. vi. 1867, pp. 175–225, with nine plates.

——. On the appendicular skeleton of the Primates. Philos. Trans. vol. clvii. 1868, pp. 299–429, with four plates. Abstract in Proc. Roy. Soc. 1867, p. 320.

Pagenstecher, H. A. Mensch und Affe. Ein Vergleich der Musculatur des Drill mit der des Menschen unter Berücksichtigung allgemeiner Gesichtspunkte der Muskellehre und der Unterschiede von Hand und Fuss. Zoolog. Gart. 1867, pp. 121–137, 161–172.

[Man and Ape. A comparison of the muscles of *Mandril leucophæus* with those of man, with regard to some other points of myology generally, and to the distinctions between hand and foot.]

Pansch, A. De sulcis et gyris in cerebris simiarum et hominum. Schrift. Univers. Kiel aus 1866, 1867, xiii. pp. xii & 42, with a plate.

Peters, W. Ueber die bei Beutelthieren im Entwicklungszustande vorkommende Verbindung des Os tympanicum

mit dem Unterkiefer, als einen neuen Beweis für die Uebereinstimmung dieses Knochens mit dem Os quadratum der übrigen Wirbelthiere. Monatsber. Ak. Wiss. Berlin, 1867, pp. 725–729.

[On the union of the tympanic bone with the lower jaw occurring in the Marsupials during development, as a fresh proof of the agreement of this bone with the os quadratum of the other classes of vertebrates. Ann. & Mag. Nat. Hist. 1868, i. p. 388.]

——. Ueber das Os tympanicum und die Gehörknöchelchen der Schnabelthiere in Bezug auf die Frage von der Deutung des Quadratbeines bei den Vögeln. Ibid. pp. 779–782, with a plate.

[On the os tympanicum and ossicula auditus in the Monotremata, in connexion with the question of the interpretation of the os quadratum in birds. Ann. & Mag. Nat. Hist. 1868, i. p. 390.]

Pettigrew, J. B. On the distribution of the fibres in the Muscular Tunics of the stomach in Man and other Mammalia. Proc. Roy. Soc. 1867, xvi. pp. 65 67 (abstract).

Pouchet, G. Note sur l'anatomie du membre antérieur du grand Fourmilier (*Myrmecophaga jubata*). Compt. Rend. 1867, July 1, pp. 34–37.

Robin, Ch. Mémoire sur l'évolution de la notocorde, des cavités des disques intervertébraux et de leur contenu gélatineux. Compt. Rend. 1867, May 6, pp. 879–886.

Sander, S. The course of the *Commissura cerebri anterior* is the same in Man and Apes as in the other Mammalia. Sitzgsber. Ges. ntrf. Freund. Berl. 1866 (1867), p. 25.

Schulze, F. E. Myologische Untersuchungen. 1. Die Sehnenverbindung in der Planta des Menschen und der Säugethiere. Siebold u. Kölliker's Zeitschr. 1867, pp. 1–22, pls. 1–3.

[Myological researches. 1. The connexion of the tendons in the planta of Man and Mammals.]

Turner, W. A contribution to the anatomy of the Pilot Whale (*Globiocephalus svineval*, Lac.). Journ. of Anat. & Physiol. i. 1867, pp. 66 79, with woodcuts.

Wilckens, —. Das Wiederkäuen und die Verdauung des Schafes. Zeitschr. ges. Ntrwiss. xxx. pp. 350–352.

[On the process of rumination and digestion in the sheep.]

Wilder, B. G. On the morphological value and relations of the human hand. Sillim. Journ. 1867, xliv. pp. 44–48.

This is an abstract of a memoir read before the Amer. Acad.

of Sc. 1866, Aug. 6, and to be published in their memoirs. The author gives the contents of his paper in 29 propositions which do not admit of being further condensed.

Wilder, B. G. Morphology and Teleology, especially in the Limbs of Mammalia. (Mem. Bost. Soc. Nat. Hist.) Abstract in Sillim. Amer. Journ. 1866, pp. 132–135.

Wyman, J. On symmetry and homology in limbs. Proc. Bost. Soc. Nat. Hist. xi. June 5, 1867 (separ. copy, pp. 45).

The object of this paper is the study of the fore and hind limbs, viewing them as if they were constructed, not only after one and the same type, but in a symmetrical manner. They would repeat each other exactly in an ideal animal, just as the right and left parts do in the actual. In the actual animal the fore and hind parts are so modified as to adapt them to special conditions of existence. Right and left parts repeat each other almost exactly, because their conditions are the same. In fore and hind limbs of the developed animal diversity is the rule; but as we go back to the early stages of embryonic life, the symmetry and equality of fore and hind parts becomes nearly exact. Although the present paper is limited to the bones of the limbs, the author thinks that, if the idea of fore and hind symmetry enters into the composition of animal structures at all, it will be traced not only in the limbs, but in all the great systems of organs.

General Notes and Faunæ.

M. Pucheran brings to a conclusion his treatise on the evidence which can be furnished by geology in explanation of the differences between existing faunas, Rev. et Mag. Zool. 1867, pp. 161–169, 197–199, 257–271 (see Zool. Record, ii. pp. 10 & 58; iii. pp. 11, 13). After some remarks on the great similarity of the faunas of Sumatra, Java, and Borneo, he recapitulates the facts demonstrating the connexion of the various faunas of the present period and the unity of plan not only of the present but also of the extinct creations. He expresses his belief in a direct descent of the living fauna from the extinct one which preceded it, the change being gradually effected by the necessity of the organisms adapting themselves to the continuous change of the soil occupied by them. He hopes that geology will make plain the changes which have taken place in the distribution of land and water, and on which the radiation of the organic types has depended.

In the *Austrian Empire* rewards have been paid for 178 bears, 1037 wolves, 9 lynxes, 525 wild cats, 1612 martens, and 5602 foxes, all killed in the year 1865. Zoolog. Gart. 1867, p. 444.

Switzerland. A list of the fossil and recent Mammalia has been given by Prof. Rütimeyer (see above, p. 3).

North China. M. A. Milne-Edwards mentions provisionally 10 new Mammalia from Mongolia and Mantschuria.

Japan. Dr. v. Martens (*l. c.* pp. 75–87, see above, p. 1) gives a general sketch of the mammals of this country.

Egypt. Dr. R. Hartmann has supplied a great desideratum in determining and enumerating the Mammalia represented by the ancient Egyptians, Zeitschr. f. ägypt. Sprache u. Alterthumskunde, ii. pp. 7–12, 19–28. It appears that many animals were represented by them which are not indigenous in Egypt, but were imported as objects of curiosity or domesticated at later periods. We give a complete list of the animals recognized by the author, as the journal quoted is not easily accessible to zoologists:—

Cynocephalus *hamadryas* and *babuin*. Cercopithecus *griseo-viridis* and *pyrrhonotus*. Pteropus *in several species*. Erinaceus *libycus* and *æthopicus*. Crocidura *crassicauda*. ? Sorex *indicus*. Felis *leo*, *leopardus*, *guttata*, *serval*, *caligata*, *caracal*, *maniculata*, *domestica*. Herpestes *ichneumon*. Genetta *vulgaris*. Viverra *civetta*. ? Rhabdogale *mustelina*. Hyæna *striata* and *crocuta*. Lycaon *pictus*. Canis *aureus*, var. *lupaster*, *niloticus*, *familiaris in five races*. Ursus *arctos*. Mus *tectorum*. Dipus. Hystrix *cristata*. Lepus *ægyptiacus*. (Camelus *dromedarius* is not represented.) Cervus *dama*. Camelopardalis. Antilope *dorcas*, *ruficollis*, *megaloceros*, *leucotis*, *leucoryx*, *beisa*, *addax*, *bubalis*, and *several others indistinctly represented*. Ibex *nubiana*. Capra *hircus in two principal types and various intermediate forms*. Ammotragus *tragelaphus*. Ovis *aries in three varieties and numerous intermediate forms; the variety steatopygos is not indigenous*. Bos *taurus in three breeds*. Hippopotamus. Phacochœrus *æliani*. Sus *domesticus*. Equus *caballus* (a late importation), *asinus* *. Hyrax. Rhinoceros. Elephas *africanus*. Orycteropus *capensis*. The paper contains many highly interesting observations on the races of the domestic animals, upon which we cannot enter here.

On the domestic animals of Egypt see Senoner, A., p. 12.

Nubia. Sir S. W. Baker's 'The Nile Tributaries of Abyssinia and the Sword Hunters of the Hamran Arabs,' London, 1867, 8vo, pp. 596, contains numerous observations on the animals met with by the celebrated traveller.

North-eastern Africa. Messrs. v. Heuglin and Fitzinger have attempted to give a complete list of the Mammals of North-eastern Africa. The nucleus of the list appears to have been the collections made by the former gentleman, to which Dr. Fitzinger has added other species from works accessible to him. The list is neither complete nor critically worked out. The species are not described; only some remarks on their geographical distribution are given. The list contains 12 Quadrumana, 38 Bats, 45 Carnivores, 16 Insectivores, 62 Rodents, 2 Edentata, 13 Pachyderms, 4 Solidungula, 61 Ruminants, and 5 Cetaceans. Sitzgsber. Ak. Wiss. Wien, liv. pp. 537–611.

West Africa. We have to refer to P. B. Du Chaillu's 'A Journey to

* The author says that Heuglin's *E. tæniopus* may be erased from the system.

Ashango-Land,' London, 1867, 8vo, pp. 501, which contains the writer's more recent observations on the *Gorilla*, *Chimpanzee*, *Potamogale*, and *Pholidotus africanus*.

South-western Africa. Prof. Peters enumerates seven species of *Chiroptera* collected at Otjimbingue. Monatsber. Ak. Wiss. Berl. 1867, p. 234.

Madagascar. The work on the Mammals and Birds of Madagascar by Messrs. Schlegel & Pollen has been mentioned above (p. 2). Beside the zoological descriptions of the new or imperfectly known species, M. Pollen has given his notes on the habits or geographical distribution of *Lichanotus brevicaudatus* (p. 20), *Avahis laniger* and *Lemur varius* (p. 21), *Lemur catta* and *Chiromys* (p. 22, rather unimportant), *Galidia elegans* and *concolor* (p. 23), *Centetes* (p. 24), *Pteropus edwardsii* (p. 25), *Taphozous leucopterus* and *Dysopes* (p. 26), *Mus* (p. 27), *Sus larvatus* (p. 28), and Cetaceans (p. 29).

M. Grandidier enumerates 39 species of Mammalia collected by him in Madagascar, Rev. et Mag. Zool. 1867, p. 313.

Auckland Islands. Students of the fauna of these islands ought to refer to a narrative by Capt. Th. Musgrave, 'Castaway on the Auckland Isles,' London, 1866, 16mo, which contains occasional notes on the few animals observed by the author.

Nova Scotia. Dr. Gilpin has continued his very interesting observations on the Mammalia, Proc. & Trans. Nov. Scot. Inst. Nat. Sc. ii. 1867, pp. 8–16. This part contains the account of the *Mustelidæ*.

United States, Arizona. Dr. Elliott Coues has given a very interesting account of the Mammals of this territory. He enumerates about 70 species, adding his observations on their habits. A squirrel is described as new. Amer. Natur. i. 1867, pp. 281–292, 351–363, 393–400, 531–541.—A list of 28 species with the systematic names has been published by the same author in Proc. Ac. Nat. Sc. Phil. 1867, pp. 133–136.

QUADRUMANA.

Mr. St. G. Mivart has published a memoir 'On the Appendicular Skeleton of the Primates,' of which an abstract is given in Proc. Roy. Soc. 1867, p. 320, and which has appeared in Philos. Trans. clvii. pp. 299–429, pls. 11–14 :—

The author begins by mentioning the principal variations found in the order Primates, as to the absolute and relative strength of the pectoral limb with and without the manus; and then, taking each bone separately, describes the modifications undergone by each in all the genera of the order, as also the relative size of the segments and bones of the limb compared to each other and to the spine. The pelvic limb is then similarly treated of, and, in addition, its segments and bones are compared with the homotypal segments and bones of the pectoral limb. The author after this reconsiders the question as to the use of the terms "hand" and "foot," and the applicability of the term "Quadrumanous" to Apes and Lemuroids. He opposes the position lately assumed by Dr. Lucae (see Zool. Record, ii. p. 20), that, both anatomically and physiologically, the pes of apes is more like the human hand than the human foot. Tables of the dimensions and proportions of the limbs, their segments and bones, are then given, exhibiting the variations presented in these respects throughout the whole series of genera. The author then

considers the more peculiar forms of the order, beginning with man. The principal resemblances and differences in form, size, and proportion between the human appendicular skeleton and that of other Primates are given in detail, followed by a list of those points in which man differs, as to the bony structure of his limbs, from all other Primates. The limb-skeletons of the Orang, Marmoset, Indri, Slender Lemur, Tarsier, and Aye-aye are then similarly reviewed, and lists given of the absolute peculiarities found in each. The conclusion arrived at from these comparisons is, that Man differs less from the higher Apes than do certain Primates below him from each other, and that he, *thus judged*, evidently takes his place amongst the members of the suborder Anthropoidea. The author concludes by stating what he believed to be the degrees of affinity existing between the various forms, as far as could be ascertained from the consideration of the appendicular skeleton *exclusively*.

Simiidæ.

Mr. St. G. Mivart has described the appendicular part of the skeleton of *Simia* with the minuteness of human osteology, Trans. Zool. Soc. vi. pp. 175–225, figuring each bone, pls. 35–43, and comparing them with those of the Chimpanzee, the Gorilla, and Man. He concludes with the following remarks :—

The Orang differs from every other Primate without exception in :—the great absolute length of the pectoral limb minus the manus, of the manus itself, of its third digit both with and without its metacarpal, and of the metacarpal of the pollex; the great difference between the length of the pollex and that of the index; the large diameter of the acetabulum compared with the length of the spine; the small proportion borne by the femur to the humerus; the very obtuse angle formed by the neck of the femur with its shaft; the all but constant absence of the pit for the ligamentum teres on the head of the femur; the shortness of the tibia compared with the humerus; the length of the pes compared with that of the rest of the pelvic limb; the length of the pes compared with that of the tibia; the absolute length of the three middle metatarsals; the absolute length of the longest digit with its metatarsal; the very small proportion borne by the length of the hallux to that of the longest digit of the pes; the occasional absence of the second digit of the hallux; the great length of the index, with its metatarsal, compared with the length of the spine; the small length of the hallux (both with and without its metatarsal) compared with that of the whole pes; the great length of the index, without its metatarsal, compared with that of the whole pes; the nearly equal length of the indices of the pes and manus, both with and without the metatarsal and metacarpal; the shortness of the tarsus compared with the length of the pes. Thus the Orang is one of the most peculiar and aberrant forms to be found in the order Primates.

Prof. Bischoff has published an important work on the skulls of the Anthropoid Apes (see above, p. 4). After introductory remarks on the history of our knowledge of these animals, and general descriptions of their skulls, he proceeds to the chief object of his researches, viz., first, a comparison of the skulls of the two sexes of each of the three apes separately in an adult state;

secondly, a comparison of the skulls of the adult male and female of one species with those of the corresponding sex of the two others; and, finally, of the skulls of young individuals. He has not been able to convince himself of the existence of more than three species. Of the contents of the concluding chapter (which is directed against Darwin) we have to mention, *first*, that, in the author's opinion, there can be no question as regards the relative affinities between Man, Anthropoid Apes, and the other Quadrumana, as soon as due attention is paid to the whole of the differences existing between them; it is only when isolated points are taken into a one-sided consideration, that Man can be associated with the Anthropoids, and these separated from the other Quadrumana. *Secondly*, if we limit ourselves to the examination of the skull and brain only (which are the most important points), the Chimpanzee proves to approach more closely to Man than the Gorilla and Orang. *Thirdly*, if we assume Man to have descended in a direct line from a being of lower organization, this being cannot be coexistent with Man; and therefore none of the Anthropoid Apes is his direct ancestor.

An abstract of the concluding chapter is also given in Sillim. Journ. 1867, xliv. p. 142.

The memoir is illustrated by 22 beautifully executed lithographic plates.

Some remarks on another skull of a male Gorilla, by the same author, in Sitzgsber. bayer. Ak. Wiss. 1867, i. p. 444.

Troglodytes gorilla. Mr. W. W. Reade has published some short notes on its habits in Americ. Natur. i. 1867, pp. 177–180.—Prof. Halford has described the skeletons of a male and female. Trans. & Proc. R. Soc. Victor. vii. pp. 34–39.

Troglodytes niger. Prof. Bischoff has examined two other skulls of the Chimpanzee, which confirm him in his opinion that *Troglodytes tschego* is not a distinct species. He refers also to Prof. Brühl's work on the Orangs (Wien, 1856), in which the author distinguishes (erroneously) two species from the presence or absence of a crest on the head. Sitzgsber. bayer. Ak. 1867, i. pp. 283–293.—He also mentions the skull of a female with six molars. Ibid. p. 444.—Prof. Humphry's observations, in Journ. Anat. & Physiol. 1867, i. pp. 254–268, refer chiefly to the anatomical differences in the hinder and lower limbs from the corresponding parts in man.—Dr. Slack gives the measurements of a skeleton which he has determined as *Anthropopithecus tschego*, Proc. Ac. Nat. Sc. Philad. 1867, p. 34.

Semnopithecus entellus. Capt. Hutton demonstrates that this monkey is entirely and absolutely restricted within narrow limits to the hot tropical plains of the south-western Gangetic provinces. Proc. Zool. Soc. 1867, pp. 944–952.

Macacus fur, sp. n., Slack, Proc. Ac. Nat. Sc. Phil. 1867, p. 36, pl. 1, from Luzon.

Cynocephalus doguera. Notes on an Abyssinian example, by Slack, *l. c.* p. 35.

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Mandril leucophæus. Prof. Pagenstecher has examined the muscles and compared them with those of man, treating on this occasion on some other points of general myology and osteology. Zool. Gart. 1867, pp. 121–137, 161–172.

Cebidæ.

Cebus fatuellus. Dr. Hensel narrates his experiences with this species during his travels in Southern Brazil. Zool. Gart. 1867, pp. 372–374.

Mycetes seniculus. Dr. Hensel gives a very interesting account of his observations on this monkey during his sojourn in Southern Brazil, *l. c.* pp. 361–372.

Mycetes palliatus (Gray) is stated by Dr. Slack to be the young of *Aluata niger.* Proc. Ac. Nat. Sc. Phil. 1867, p. 36.

Ateles bartlettii, sp. n., Gray, Proc. Zool. Soc. 1867, p. 992, pl. 47 (or Ann. & Mag. Nat. Hist. xx. p. 300), from Xeberos, Upper Amazons.

Lemuridæ.

Mr. St. G. Mivart has examined the specimens in the Collection at the Jardin des Plantes, and published the results of his examination as Notes on the Osteology of the Lemuridæ, additional to the memoir published in 1864 (see Zool. Record, i. p. 13). Proc. Zool. Soc. 1867, pp. 960–975. Among other interesting forms he examined *Chirogaleus furcifer* and *Lepilemur*; and adds now the osteological character of these genera, and of *Microcebus*, which, however, is only provisionally retained as a distinct genus. He gives also the characters of the species and their synonymy.

Messrs. Schlegel and Pollen describe, in their 'Recherches sur la faune de Madagascar':—*Lemur macaco*, p. 1; *Lemur mayotensis*, p. 3; *Hapalemur griseus*, p. 6; *Chirogaleus furcifer*, p. 8, pl. 5; *Lepilemur mustelinus*, p. 10, pl. 4; and *Microcebus coquereli*, sp. n., p. 12, pl. 6.

Indris. Mr. St. G. Mivart has published, as a further addition to his memoirs on the skulls of *Lemuridæ* (see Zool. Record, i. p. 13, and iii. p. 16), a very detailed description of the skull of *Indris diadema.* He has come to the conclusion that the three forms of *Indrisinæ* form one genus only; he gives their craniological characters at the end of the paper. Proc. Zool. Soc. 1867, pp. 247–256, pl. 18.

Propithecus verreauxi, sp. n., Grandidier, Rev. et Mag. Zool. 1867, pp. 84, 313, from Madagascar.

Microcebus coquereli is figured and described in Pollen, Contribut. Hist. Nat. Lémur. part 1; and is evidently identical with *Chirogaleus coquereli*, sp. n., Grandidier, Rev. et Mag. Zool. 1867, p. 85, from Madagascar.

Lepilemur ruficaudatus, sp. n., Grandidier, *l. c.* p. 256, Madagascar.

Nycticebus cinereus, sp. n., A. Milne-Edwards, Ann. Sc. Nat. 1867, vii. p. 161, and Nouv. Arch. Mus. Bull. iii. p. 9, pl. 3, from Siam and Cochinchina.

Prosimia flavifrons, sp. n., Gray, Proc. Zool. Soc. 1867, p. 596, pl. 31, Madagascar.

Galago elegantulus is regarded as distinct from *G. crassicaudatus* by Slack, Proc. Ac. Nat. Sc. Philad. 1867, p. 37.

Galago demidoffii described by J. A. Smith, Proc. R. Phys. Soc. Edinb. 1864–65, p. 303.

FERÆ.

Chiroptera.

Pteropus. Prof. Peters, who has been for some time engaged in the study of Chiroptera, has given a synopsis of 26 species, which he refers to the limited genus *Pteropus*, after having examined the typical examples in the Leyden, Paris, and London Museums. He characterizes the group of *Pteropodes* generally, and adds the synonymy of each species. Monatsber. Ak. Wiss. Berlin, 1867, pp. 320–333. Three new species are described, viz.: —*Pt. oculâris*, from Ceram, p. 326; *Pt. macrotis*, from Booroo, p. 327; and *Pt. celebensis*, p. 333. [He also mentions MacGillivray's *Pteropus geddiei*; the Recorder recollects having seen MacGillivray's description of it in a popular English periodical about the year 1860, when Cumming received the first examples from Aneiteum, where MacGillivray was then collecting.]

In a second paper (*l. c.* pp. 865–872) the synopsis of the Pteropodes is concluded; it comprises *Cynonycteris* (Ptrs.) with 4 species, *Cynopterus* (F. Cuv.) with 3, *Ptenochirus* (Ptrs.) with 1, *Megærops* (Ptrs.)=*Megæra* (Temm.) with 1, *Harpyia* (Ill.) with 1, *Epomophorus* (Benn.) with 8, *Hypsignathus* (Allen) with 1, *Macroglossus* (F. Cuv.) with 2, *Cephalotes* (Geoffr.) with 1 species.

Pteropus gouldii, sp. n., Peters=*Pt. funereus* (Gould), *l. c.* p. 703, Australia.

Pteropus dupreanus, sp. n., Schlegel & Pollen, Recherch. Faun. Madag. p. 17.

Pteropus palmarum is described as a new species by Von Heuglin, Nov. Act. Ac. Carol. Leopold. Nat. Cur. 1865, p. 34, Upper Nile *.

Macroglossus minimus, var. *australis*, Peters, *l. c.* p. 13, West Australia.

Epomophorus pusillus, sp. n., Peters,=*Ep. schoënsis* (Tomes), *l. c.* p. 870, West Africa.

Saccopteryx. Prof. Peters has published preliminary notes on the species of this genus and allied forms, chiefly from an examination of examples preserved in spirits. Monatsber. Ak. Wiss. Berl. 1867, pp. 470–481. These bats may be subdivided into several groups:—

1. *Saccopteryx* (Ill.) with *S. leptura* and *S. bilineata*.
2. *Peropteryx* (Ptrs.) with *Vespertilio caninus* (Wied.), *Proboscidea villosa* (Gervais), *Peropteryx kappleri*, sp. n., p. 473, and *Peropteryx leucoptera*, sp. n., p. 474, both from Surinam.
3. *Cormura* (Ptrs.) with *Emballonura brevirostris* (Wagn.), with figure.

* We have not been able to obtain the volume or paper in which this species is described.

4. *Balantiopteryx* (Ptrs.) with *B. plicata*, sp. n., p. 476, from Costa Rica.
5. *Rhynchonycteris* (Ptrs.) with *Vespertilio naso* (Wied.).
6. *Centronycteris* (Gray) with *Vespertilio calcarata* (Wied.).
7. *Coleura* (Ptrs.) with *Emballonura afra* (Ptrs.).
8. *Emballonura* (Kuhl) with *E. monticola* (Kuhl), *Mosia nigrescens* (Gray), and *Vespertilio semicaudata* (Peale).

The author remarks that the species provided with a pouch are exclusively neotropical, that the pouchless American species are more closely allied to those with a pouch than to those of the Old World, and that the single African species shows more affinity to the American forms than to *Emballonura*, which is limited to the East.

Mimon (Gray). Remarks, from an examination of fresh specimens, by Peters, Monatsber. Ak. Wiss. Berlin, 1867, p. 469.

Rhinolophus deckenii, sp. n., Peters, *l. c.* p. 705, Zanzibar.

Vespertilio (*Pternopterus*) *lobipes*, sp. n., Peters, *l. c.* p. 706, Arrakan.

Vespertilio temminckii is regarded as the type of a distinct subgenus, *Alobus*, by Peters, *l. c.* p. 707.

Amblyotus atratus. Kolenati had described a bat from Mount Altvater, in Moravia, under this name (Sitzsber. Ak. Wiss. Wien, 1858, xxix. p. 250). Its existence as a distinct form had been doubted; however, Hr. Jeitteles (*l. c.*) has rediscovered it, and, after having given a detailed description, he sums up its characters thus (p. 9):—*Amblyotus*. Molars $\frac{4-4}{5-5}$. Ears without folds, and with the outer margin terminating in front of the tragus. Tragus convex on the upper third of the inner margin, its end being rounded and bent upwards and outwards. Calcaneum with an extremely narrow, lateral cutaneous flap, not projecting outwards. Thus the genus would be intermediate between *Vesperugo* and *Vespertilio*.—*Char. spec.* Ears much shorter than head; wing-membrane reaching to the root of the toes; extremity of tail projecting beyond the membrane. Cutting-surface of the lower front teeth parallel to the direction of the mandible. The first upper front tooth bicuspid, somewhat higher, and transversely conspicuously stronger than the second. Snout broad and obtuse, with but few hairs, black. Hairs on the back shining golden. The author adds that this bat is possibly a hybrid between *Vesperugo nilssonii*, or *discolor*, and some species of *Vespertilio*, perhaps *daubentonii* or *mystacinus*. (A translation of this paper appeared in Ann. & Mag. Nat. Hist. 1868, i. pp. 157–160).

Insectivora.

Mr. St. G. Mivart has published an elaborate paper on the osteology of this family, dwelling principally on the structure of the skull and dentition. Journ. of Anat. & Physiol. 1867, 1st ser. pp. 281–313, and 2nd ser. i. pp. 117–154. He first describes six typical forms, viz.:—*Erinaceus, Talpa, Sorex, Tupaia, Macroscelides*, and *Centetes*. The other genera examined are:—*Hylomys, Ptilocercus, Petrodromus, Rhynchocyon, Gymnura, Condylura, Scalops*, and *Scapanus* (in the first part of the paper); *Urotrichus, Myogale, Ericulus, Echinops, Solenodon, Potamogale, Chrysochloris, Calcochloris* (g. n. = *Chrysochloris*, spec., with two molars and without vesicular enlargement in the temporal fossa),

and *Galeopithecus* (in the second part). The author calls attention to a cranial canal opening externally, below and more or less behind the optic foramen; it is largely developed in *Petrodromus, Rhynchocyon,* and *Gymnura*; it does not open into the cranial cavity, but communicates with its fellow on the opposite side: the author proposes to call it *suboptic* foramen. The general results arrived at, with regard to the affinities of the genera, follow very closely the arrangement proposed by Prof. Peters; but Mr. Mivart separates *Chrysochloris* and *Calcochloris* from the *Talpidæ* into a distinct division, *Chrysochloridæ,* and subdivides the *Talpidæ* into 1. *Talpina* (*Scalops, Scapanus, Condylura, Talpa*), and 2. *Myogalina* (*Urotrichus, Myogale*). The osteological, dental, and other anatomical characters of each genus and division are collected at the end of the paper, which is very instructively illustrated by numerous woodcuts.—A French translation of this paper has also appeared in Ann. Sc. Nat. 1867, viii. p. 221.

Dr. Fitzinger has compiled the descriptions of the known species of the group *Macroscelides* (*Macroscelis, Petrodromus,* and *Rhynchocyon*). Sitzgsber. Ak. Wiss. Wien, 1867, lvi. pp. 914–941. He does not appear to be aware that the group was established several years ago by Peters.

Dr. Fitzinger's paper on the family of *Erinacei* (Sitzgsber. Ak. Wiss. Wien, lvi. pp. 844–890) is distinguished by a rare unacquaintance with the recent labours of zoologists, although he professes to give an account "according to the present state of science." He arranges *Echinogale, Ericulus,* and *Centetes* into "one natural family," leaving out *Gymnura. Erinaceus* is split into three genera (*Pteroechinus, Hemiechinus, Erinaceus*) based on almost trivial characters, and ranking equal with *Centetes.* The author's object has been to compile descriptions of all the species known. We notice one species described as new, *Hemiechinus pectoralis,* from Arabia petræa, p. 862.

Potamogale. Prof. Allman rectifies an error in his description of the dental formula (see Zoolog. Record, iii. p. 27); the number of molars is $\frac{4-4}{4-4}$. Proc. Zool. Soc. 1867, p. 256.

Talpa europæa. Mr. Spence Bate has examined the dentition of very young moles. He fixes the formula of deciduous teeth as Incis. $\frac{3}{3}$, Can. $\frac{1}{1}$, Premol. $\frac{4}{4} \times 2 = 32$, and that of the permanent set as Incis. $\frac{3}{3}$, Can. $\frac{1}{1}$, Premol. $\frac{4}{4}$, Mol. $\frac{3}{3} \times 2 = 44$. Ann. & Mag. Nat. Hist. 1867, xix. pp. 377–381, pl. 11.

Scaptochirus, g. n., A. Milne-Edwards, Ann. Sc. Nat. 1867, vii. p. 375. Near *Talpa*, but with a different dentition, viz. inc. $\frac{3}{4}$, can. $\frac{1}{1}$, præm. $\frac{2}{2}$, mol. $\frac{2}{2}$. *Scaptochirus moschatus*, sp. n., from North China.

Sorex pygmæus has been discovered in Lower Austria by Jeitteles, who

gives a detailed description in Verhandl. zool.-bot. Ges. Wien, 1867, pp. 909–912.

Felidæ.

Dr. Gray has examined the large series of skulls of *Felidæ* in the British Museum, with the view of basing a systematic division upon them. With the exception of the Guepard, the skulls present very few tangible characters; and even the peculiarity of the skull of the Lynxes is not very striking; it consists in the lateral processes of the intermaxillaries and the frontal bones being elongate, nearly reaching each other, and separating the nasals from the maxillæ. Dr. Gray directs attention also to the fact that the diurnal forms (with round pupil) have the orbit of a considerably smaller size than the nocturnal (with vertical pupil). Proc. Zool. Soc. 1867, pp. 258–277. The species are enumerated with their principal synonyms. The classification adopted is the following :—

Sect. I. Normal Cats.

Tribe 1. *True Cats—Felina.*

A. *Diurnal Cats*:—1. Uncia (*U. irbis*, skull fig. p. 262); 2. Leo; 3. Tigris; 4. Leopardus (with *L. pardus*, *L. japonensis*, *L. chinensis*, sp. n., skull fig. p. 264, *L. onca*, of which *L. hernandezi* is a variety, *L. auratus*, *L. concolor*); 5. Neofelis (based on *Felis macroscelis*, skull fig. p. 266, and *F. brachyurus*).

B. *Nocturnal Cats*:—6. Pardalina (*warwickii*=*Felis himalayanus*, skull fig. p. 267); 7. Catolynx, p. 267 (based on *F. marmoratus* and *charltoni*); 8. Viverriceps, p. 268 (*bennettii*=*F. viverrina*, skull fig. p. 268, *planiceps*, skull fig. p. 269, *ellioti*, and *rubiginosa*); 9. Pajeros (*pampanus*, p. 270 =*Felis pajeros*); 10. Felis, with 30 species subdivided according to the markings; skull of *F. pardochroa* fig. on p. 274; 11. Chaus, with three species (on this and the preceding genus, see also pp. 874–876).

Tribe 2. *Lynxes—Lyncina.*

12. Lyncus, with 8 species; 13. Caracal (*melanotis*).

Sect. II. Abnormal or Dog-like Cats.

Tribe 3. *Guepardina.*

14. Gueparda.

Dr. Gray has reexamined the specimens of Cats in the British Museum, having made considerable additions to the collections. His observations, which are published in Proc. Zool. Soc. 1867, pp. 394–405, refer to the following species :—

1. He amends the diagnoses of the three spotted species from West Africa —*F. neglecta*, *servalina*, and *rutila*.

2. *Gueparda guttata*, juv., is described and figured, p. 396, pl. 25.

3. *Felis inconspicua* is the Indian representative of *Felis caligata* from Africa, the varieties of which have been described as *F. maniculata*, *pulchella*,

chaus, obscura, &c. In a subsequent paper (pp. 874–876) the author shows that F. Cuvier and Blyth have erroneously confounded this long-tailed African form with the true Indian short-tailed *Chaus*.

4. Some of the small spotted Asiatic cats have a long skull and complete bony orbits (p. 399).

5. Others have an ovate skull and incomplete orbits:—*F. sumatrana, javensis, nepalensis, chinensis, pardinoides* (sp. n., p. 400), *wagati, pardochroa, tennasserimensis* (sp. n., p. 400), *servalina, jerdoni*.

6. *Felis ornata* (Gray) is redescribed, p. 401.

7. *Leopardus hernandezii* has the same skull as the common Jaguar, and is only a variety of it, p. 402.

8. The varieties or species of Ocelots are again characterized, and a new form, *Felis pardoides*, is added, p. 403.

9. The three small spotted South-American cats (*F. macroura, mitis*, and *tigrina*) are characterized, p. 404.

10. *Pardalina warwickii* = *Leopardus himalayanus* (Gray) is probably from South America; it is described and figured, p. 405, pl. 25.

Leopardus japonensis (Gray). Dr. v. Martens doubts the occurrence of a Leopard in Japan. Preuss. Exped. Ost Asien, p. 76.

Felis aurata (Temm.) figured by Sclater in Proc. Zool. Soc. 1867, pl. 36.

Felis domestica. Prof. Rolleston shows, first, that the ancient Greeks and Romans had not domesticated the Cat in classical times, that there is no reason for supposing that it was domesticated in any other country than Egypt before the Christian era, that it was, nevertheless, domesticated in Western Europe at an earlier period than is commonly assigned, there being evidence to show that the Cat and the Common Marten were in use as domesticated animals side by side, and at the same time in Italy, nine hundred years before the period of the Crusades; secondly, that *Mustela foina* was kept in a domesticated state, and is the "Cat" or γαλῆ of the ancients, who denominated *Mustela martes* γαλῆ ἀγρία, and *Viverra genetta* Ταρτησσία γαλῆ. Journ. of Anat. & Physiol. 1867, i. pp. 47–61.

On a Cat with supernumerary digits. B. G. Wilder in Proc. Bost. Nat. Hist. Soc. xi. pp. 3–8.

Cryptoprocta ferox. M. A. Milne-Edwards has examined the adult specimen and skeletons collected by M. A. Grandidier. He describes chiefly its dental and osteological characters, and comes to the conclusion that it approaches the *Felidæ* most closely, and that it should form a plantigrade division of this family. Ann. Sc. Nat. 1867, vii. pp. 314–338. Plates 7–10 represent chiefly the skeleton and its parts.

The skull and habits of the same animal are described by Schlegel & Pollen, Recherch. Faun. Madag. p. 13; skull figured on pl. 9.

Viverridæ.

Viverra schlegelii again noticed by Schlegel & Pollen, *l. c.* p. 16.

Galidia decemlineata, sp. n., Grandidier, Rev. et Mag. Zool. 1867, p. 85, from Madagascar.

Canidæ.

Canis domesticus. Dr. Fitzinger has published "Researches on the origin of the Dog," Sitzgsber. Ak. Wiss. Wien, liv. pp. 396–457. The author examines the records preserved from the times of the ancient Romans, Greeks,

and Egyptians, and contained partly in their writings, partly in old sculptures; he says that fourteen kinds of dogs can be distinguished in the Roman and Greek records; of these he considers five to be principal types or species, five others climatic varieties, the remainder being either breeds artificially produced or hybrids. As regards the Egyptian dogs, seven kinds may be distinguished, beside the Jackal, and in three of them distinct specific types can be recognized. In a similar way he treats of the dogs known to have existed in the middle ages. He comes to the following conclusions:—1. That in the oldest times such forms only were known the origin of which cannot be derived from other forms, and which, therefore, must be regarded as original types or species; that only a few hybrids (between these types and certain still existing wild dogs) existed. 2. That the same can be observed in the time of the old Romans and Greeks, and even during the middle ages. 3. That the number of hybrids has been increased in later periods, but that those ancient types have been preserved with their original characters down to our period. 4. Wolves, jackals, and foxes &c. are species quite distinct from the domestic dog; they may have interbred with the latter, and thus influenced certain breeds; but they are not the parents of the domestic dog. 5. Seven species may be distinguished among our dogs:—*C. domesticus*, *extrarius*, *vertagus*, *sagax*, *molossus*, *leporarius*, and the naked dog, *C. caribæus*.

In a second paper, entitled "The Races of the Domestic Dog," and extending over pp. 377–507, 514–585, 776–823 of vol. lvi. of the Sitzgsber. Ak. Wiss. Wien, the same author enumerates and partly describes the infinite number of varieties of the dog, adding synonyms and references to some of the well-known works on natural history.

Eug. Gayot, 'Le chien, histoire naturelle,' Paris, 1867, 8vo, with an atlas of 67 plates and 127 engravings, is known to us from a list of works only.

Dr. Gray has published some notes on the Chinese Pug-nosed Spaniel or Lap-dog, and figured the skull. Proc. Zool. Soc. 1867, pp. 40–43.

Canis lycaon. A black wolf killed in Belgium is referred to this species by A. Dubois, Arch. Cosmolog. p. 78, pl. 5.

Mustelidæ.

Mustela. Dr. Gilpin gives an account of the Nova-Scotian species, viz. *Mustela pennanti* and *americana*, *Putorius vison*, *nigrescens*, *cicognanii*, *richardsonii*, and *noveboracensis*. Proc. & Trans. Nov. Scot. Inst. Nat. Sc. ii. 1867, pp. 8–16.

Mustela foina. Prof. Rolleston supposes that the Stone-Marten was functionally the Cat of the ancients. See above, p. 26, under *Felis domestica*.

Mellivora leuconota, sp. n., Sclater, Proc. Zool. Soc. 1867, p. 98, pl. 8, from West Africa.

Lutra. Dr. Gray has described a new Otter from Japan, *Lutronectes* (g. n.) *whiteleyi*, Proc. Zool. Soc. 1867, p. 180, with a woodcut of the skull; and indicates two species from Formosa, one of which is named *Lutra* (*Hydrogale*) *swinhoei*, p. 182.

Lutra lutreola. Hr. Jeitteles shows the occurrence of this otter in Moravia, and compares its skull with that of the common otter. *L. c.* pp. 10–14.

Ursidæ.

Ursus. M. Bourguignat describes the remains of a subfossil bear found in

Algeria (*Ursus faidherbianus*), and on this occasion reviews the evidence regarding the occurrence of one or two living species in the Atlas. Ann. Sc. Nat. 1867, viii. pp. 41–51.

Ursus lasiotus is described as a new species by Dr. Gray, Ann. & Mag. Nat. Hist. xx. p. 301, from North China. Mr. Sclater believes that it had been previously named by Pucheran.

Ursus piscator, Proc. Zool. Soc. 1867, p. 817, with woodcut of head.

Ursus formosanus (Swinhoe) appears to be a rather doubtful species, as regards external characters. Sclater, *l. c.*

Nasua. Dr. Hensel thinks that all the species should be united into one, *N. solitaria* being established for old males. The skulls are subject to very great changes, dependent on sex and age. Sitzgsber. ntrf. Freund. Berl. f. 1867, p. 22.

Phocidæ.

Otaria hookeri. On the cause of death of a specimen in the menagerie of the Zoological Society. Murie, Proc. Zool. Soc. 1867, pp. 243–44.

Macrorhinus angustirostris, sp. n., Gill, Proc. Chicago Ac. Sc. i. pp. 33, 34, founded on a skull from Lower California.

Arctocephalus, sp.? An interesting account of the observations made by Capt. Th. Musgrave on a Seal very abundant on the Auckland Islands is contained in his 'Castaway on the Auckland Isles,' London, 1866, 8vo, pp. 141–150.

Trichechus rosmarus. Notes on a living example obtained by the Zoological Society of London, by Sclater, Proc. Zool. Soc. 1867, pp. 818–820.

ROSORES.

Dr. L. J. Fitzinger has written an "Attempt at a Natural Arrangement of Rodents" in Sitzgsber. Ak. Wiss. Wien, 1867, lv. pp. 453–515, and lvi. pp. 57–168. He commences by giving an abstract of the systems proposed by Illiger, Cuvier, Kaup, Milne-Edwards, Waterhouse, Wagner, and Gray (1843), adopting that of Wagner with some modifications. *Chiromys* is the type of the first of the fourteen families adopted by the author. He then proceeds to give the dignoses of the genera, adding a list of the species, with synonyms, but without reference to the works in which they are described. He proposes some generic divisions, and also changes some of the specific names, with which he does not appear to have been pleased.

We abstain from giving an abstract of this paper, which, although very bulky, is quite valueless. It appears to be a mere compilation from some of the standard works on Mammalia, and shows no trace of original research. We can hardly conceive how an author who has not access to either the necessary materials or the literature can venture to undertake a natural arrangement of an order which, among Mammalia, has the greatest variety of types, and, yet, is in a state of "infinite confusion." A preliminary study of species is generally deemed necessary for the definition of genera; but the author is satisfied with giving a simple uncritical list of species. The researches of

Gray, Peters, Lilljeborg, Blyth, Sclater, &c., within the last ten years, are perfectly unknown to the author; so that all the errors in the generic diagnoses, corrected by them, reappear in this paper, in addition to those introduced by the author himself! None of the recent species and genera are admitted, although some of the latter have received new names.

Mus. Dr. Gray describes two new species from North Celebes, *Mus celebensis* and *Mus xanthura*, Proc. Zool. Soc. 1867, May 23, p. 598, and proposes to form for the former and *Mus macropus* a section, *Gymnomys*.

Prof. Peters also describes *Mus macropus*, regarding it as the type of a distinct genus, *Uromys*. Monatsber. Ak. Wiss. Berl. 1867, June 6, p. 343, with a plate.

Mus rattus. Hr. Jeitteles states that this rat is still found in Moravia. He gives a detailed description of it, as well as of a hybrid between it and *Mus decumanus*. He thinks that *Mus hibernicus* of Thompson was also a hybrid between these two species. *L. c.* pp. 24–35.

Mus rattus and *alexandrinus.* Prof. Troschel states, in opposition to De l'Isle's results, that these species are specifically distinct, as is evident from an examination of the skulls. He thinks that De l'Isle has mistaken a variety of *Mus rattus* for the true *M. alexandrinus.* Wiegm. Arch. 1866, ii. p. 170.—Dr. von Martens has given a review of De l'Isle's important researches (for which see Zoolog. Record, ii. p. 39). Zool. Gart. 1867, pp. 178–184, 216–221.

Acanthomys leucopus, sp. n., Gray, Proc. Zool. Soc. 1867, p. 598, Cape York, North Australia.

Hapalotis. Mr. Krefft (Proc. Zool. Soc. 1867) describes as new species from Cape York, *Hapalotis caudimaculata*, p. 316, figuring the skull and dentition (this proves to be identical with *Mus macropus*, Gray), and *Hapalotis personata*, p. 318.

Echiothrix, a new genus of Rats, distinguished by the great elongation of the facial portion of the skull. Fur with an abundance of bristles, flat and channelled at the base. Upper incisors with two grooves, lower smooth, white; molars $\frac{3.3}{3.3}$; front molar much the largest, the hinder smallest; the front upper rounded on the inner, and with two folds on the outer side; the second upper with one fold on the outer side, the lower front with a slight subcentral fold on the inner side. Crown of the front upper molar with two, and the others with a single cross ridge. *Echiothrix leucura*, sp. n., Gray, Proc. Zool. Soc. 1867, p. 599, with figure of skull and dentition. From Australia.

Cricetulus is a new genus, intermediate between *Arvicola* and *Cricetus*, indicated by M. A. Milne-Edwards, Ann. Sc. Nat. 1867, vii. p. 375; cheek-pouches much developed. *Cricetulus griseus*, sp. n., from North China.

Arvicola and *Hypudæus.* M. Fatio has published a detailed monograph of the Field-mice of Geneva (see p. 4). He gives an excellent description of the habits and zoological characters of the five species observed by him, critically treating of the various means by which naturalists have endeavoured to distinguish and arrange the species. He has also carefully compiled their syno-

nymy. The species described are *Hypudæus glareolus*, *Arvicola* (*Praticola*) *amphibius*, *Arv.* (*Prat.*) *nivalis*, *Arv.* (*Prat.*) *arvalis*, *Arvicola* (*Sylvicola*) *agrestis*. Each species is represented on a coloured plate, and the skulls and dentition are figured on a separate plate.

Arvicola subterranea (Sélys-Longch.) occurs in Moravia. Jeitteles, *l. c.* p. 35.

Arvicola arvalis and *Hypudæus amphibius*. H. Beger has published a very detailed account of the anatomy in Zeitschr. ges. Ntrwiss. xxx. p. 145.

Castor fiber. Notes on the Beaver in Nova Scotia, by Capt. Hardy, Proc. & Trans. Nov. Scot. Inst. Nat. Sc. ii. 1867, pp. 17–25.

Lophiomys is a most interesting new genus, described by M. A. Milne-Edwards in L'Institut, 1867, xxxv. p. 46, Ann. Sc. Nat. 1867, vii. pp. 113–121, and more fully in Nouv. Arch. Mus. iii. pp. 81–118, pls. 6–10. It is covered with very long black and white hairs, those on the back forming a dense crest, and separated from the sides by a band of shorter brownish hairs; tail long, non-prehensile, with long hairs. It is of the size of a Guinea-pig. The author regards it as the type of a distinct family near the *Muridæ*, which he characterizes thus:—The inner toe on the hind feet can be opposed to the others; temporal fossæ covered by a granulated shield like the upper part of the skull; clavicles rudimentary. Stomach with a subpyloric glandular appendage. Molar teeth $\frac{3-3}{3-3}$. *Lophiomys imhausii*, sp. n., perhaps from Asia. The plates accompanying the memoir represent the animal, its osteology, and the principal parts of its anatomy.

A skull of the same Rodent was exhibited by Prof. Reichert in the Gesellschaft ntrf. Freund. Berl. 1867, Jan. 15, p. 1. It was obtained at Maman, north of Kassala. Prof. Peters recognized in it the type of a new genus, for which he proposed the name of *Phractomys æthiopicus*. Zeitschr. ges. Ntrwiss. 1867, Febr. p. 195. Some further remarks by Reichert, *l. c.* p. 19.

Siphneus fontanierii and *armandii*, spp. nn., A Milne-Edwards, Ann. Sc. Nat. 1867, vii. p. 376, from North China.

Dipus annulatus, sp. n., A. Milne-Edwards, *l. c.*, Mongolia.

Gerbillus brevicaudatus and *unguiculatus*, spp. nn., A. Milne-Edwards, *l. c.* p. 377.

Myoxus glis and *nitela*. Notes on the hybernation by F. Tiemann, Zoolog. Gart. 1867, p. 144. The author thinks that the season of copulation is not the spring but the autumn (October).

Myoxus dryas. Hr. Jeitteles gives an account of his observations on a living example, and a description of its skeleton, *l. c.* pp. 14–24.

Dr. Gray has published a series of papers on the species of *Sciuridæ* contained in the collection of the British Museum. In the first paper (Ann. & Mag. Nat. Hist. 1867, xx. pp. 270–286) he characterizes the genera and species of Asiatic Squirrels, in the second (pp. 323–334) those of Africa, in the third (pp. 415–434) those of the New World, and in the fourth

(pp. 434–436) the genus *Tamias*, adding the synonymy, and proposing the following arrangement :—

I. Without cheek-pouches. Fur soft, consisting of fusiform hairs and a soft under-fur. Ears ovate. Tree-Squirrels.
  A. Limbs free, without parachute.
    a. Incisors with close longitudinal grooves.
      1. *Rheithrosciurus*, g. n., p. 271; type *Sciurus macrotis* (Gray).
    b. Incisors smooth.
      2. *Sciurus*. Ears pencilled; nose rounded; tail longer than body.
      3. *Macroxus*. Ears covered with short adpressed hairs; nose short, blunt; tail longer than body.
      4. *Rhinosciurus*. Ears covered with short adpressed hairs; nose acute, produced; tail longer than the body.
  B. Limbs enclosed in skin, forming a parachute. 5. *Sciuropterus*.
II. Without cheek-pouches. Fur short, rigid, with flat channelled spines, without any under-fur. Ears rounded, scarcely raised. Ground-Squirrels. 6. *Xerus* (pp. 271 & 332).
III. With distinct cheek-pouches. Burrowing Squirrels. 7. *Tamias*.

Sciurus. Dr. Gray (*l. c.*) subdivides the species according to size, length of tail, arrangement of the hairs of the ear, and coloration; he characterizes :—nine Asiatic species, new being *Sc. leucocephalus*, p. 273, and *Sc. historicus*, from Syria, p. 273; two African species, p. 325; six American species, *Sc. hyporrhodus*, from Santa Fé de Bogotá, being new, p. 419.

M. A. Milne-Edwards describes the following new species of *Sciurus* in Rev. et Mag. Zool. 1867 :—*Sc. germanii*, p. 193, Island of Poulo-Condor; *Sc. bocourtii*, p. 193, Siam; *Sc. griseimanus*, p. 195, Cochinchina; *Sc. leucogaster*, p. 196, Siam; *Sc. davidianus*, p. 197, Peking; *Sc. pyrrhocephalus*, p. 225, Cochinchina; *Sc.* (*Tamias*) *dussumierii*, p. 226, Malabar; *Sc.* (*Tamias*) *rodolphii*, p. 227, Cochinchina; *Sc. olivaceus*, p. 228, West Africa; *Sc. aubryi*, p. 228, Gaboon; *Sc.* (*Xerus*) *flavus*, p. 229, Gaboon; *Sc. pernyi*, p. 230, pl. 19, Sétcheuen in China.

Sciurus arizonensis, sp. n., Coues, Amer. Natur. i. 1867, p. 357. Forma et coloribus corporis *Sciuro carolinensi* similis; sed minor (body 9·5 inches, tail to end of vetebræ 9·5 inches), cauda longiore, latiore, subtus distincte tricolorata (tail tricolor below, being centrally tawny, bordered with black, which is in turn fringed with white).—A detailed description is given. From Arizona.

Sciurus getulus (L.) = *Xerus trivittatus* (Gray). Sclater, Proc. Zool. Soc. 1867, p. 817.

Macroxus. Dr. Gray (*l. c.*) subdivides the species according to size and coloration and the width of the incisors. He characterizes 38 Asiatic species, new being :—*M.* (*Callosciurus*) *sarawakensis*, p. 277; *M.* (*Palmista*) *layardi*, from Ceylon, p. 280; *M. similis*, from Nepal, p. 281; *M. inornatus*, from the Laos Mountains, p. 282; *M. leucopus*, from Gambogia, p. 282; *M. pluto*, from Borneo, p. 283; *M. punctatissimus*, p. 283. 14 African species, new being :—*M. shirensis*, from East Africa, p. 327; *M. isabellinus*, from West Africa, p. 329. 33 American species, new being :—*M. nicoyanus*, from Costa Rica, p. 423; *M. morio*, p. 424; *M. maurus*, from Oaxaca, p. 425; *M. melania*, from Point Berica, p. 425; *M. neglectus*, p. 425; *M.*

griseoflavus, from Guatemala, p. 427; *M. leucops*, from Mexico, p. 427; *M. fumigatus*, from the Upper Amazons, p. 428; *M. brunneoniger*, from Brazil, p. 429; *M. xanthotus*, from Central America, p. 429; *M. ignitus*, from Bolivia, p. 429; *M. griseogena*, from Central America, p. 429; *M. leucogaster*, from Bolivia and Brazil, p. 430; *M. fraseri*, from Ecuador; p. 430; *M. tephrogaster* and *M. taeniurus*, from Central America, p. 431; *M. irroratus*, from the Upper Ucayale, p. 431; *M. flaviventer*, from Brazil, p. 432.

Tamias. Dr. Gray (*l. c.*) characterizes seven species of this genus, *T. quadrimaculatus*, from California, being new, p. 435.

Spermophilus citillus. Notes on the hybernation by F. Tiemann, Zool. Gart. 1867, p. 144. The author thinks that the season of copulation is not the spring but the autumn (October).

Spermophilus mongolicus, sp. n., A. Milne-Edwards, Ann. Sc. Nat. 1867, vii. p. 376.

Dactylomys. Dr. Hensel has made a short communication on this Rodent before the Gesellsch. ntrf. Freund. Berl. 1867, Sitzgsber. p. 21. He found it in South Brazil. It appears to be related to the *Hystricina*, and more especially to *Chætomys*.

Hydrochærus. Remarks on the milk-dentition by Dr. Hensel, in Sitzgsber. Ges. ntrf. Freund. Berl. 1866 (1867), p. 28.

Dr. Gray has published notes on the skulls of Hares and Picas in the British Museum, Ann. & Mag. Nat. Hist. 1867, xx. pp. 219–225. He follows Professor Lilljeborg in regarding ing them as two distinct groups of the *Duplicidentata*, and arranges them thus :—

Fam. Lagomyidæ, with *Ogotoma* (*Ogotoma pallasii* = *Lagomys ogotoma*) and *Lagomys* (9 species).

Fam. Leporidæ.

Sect. I. Skull high, rather compressed. Nose compressed; cheeks nearly flat, separated from the orbits by a strong ridge, and edged above by the prominent upper hinder elongated process of the intermaxillaries. Orbits large, roundish. Cutting-teeth moderate.

A. *Hares.* The hinder nasal aperture of skull broad, deep, rounded above, and with nearly erect sides. Young born with the eyes open, and the body covered with hair. Living in "forms" on the surface of the earth.

a. Postorbital process more or less soldered with the skull.

1. *Hydrolagus* = *Lepus* § F, Baird. 2 species.
2. *Sylvilagus* = *Lepus* § D, Baird. 3 species.
3. *Eulagos*, with *L. mediterraneus*, and *Eulagos judææ*, sp. n., p. 222, from Palestine.

b. Postorbital process separate from the skull.

4. *Lepus* = *Lepus* §§ A & E, Baird. 30 species.
5. *Tapeti*, with *L. brasiliensis* (L.).

B. *Rabbits.* The hinder nasal aperture of skull narrow, deep, angular, contracted above, with sloping sides. Living in burrows. Young born blind and naked.

6. *Cuniculus* = *Lepus* § C, Baird. 1 species.

Sect. II. Skull conical, subcylindrical; nose thick; cheeks very con-

vex. Orbits moderate, oblong; the hinder upper orbital notch open, short; zygomatic arches broad, flat, and produced behind over the temple.

7. *Carpolagus* (Blyth).

Lepus microtis is described as a new species by Von Heuglin, Nov. Act. Ac. Carol. Leop. Nat. Cur. 1865, p. 32, from North-eastern Africa.

EDENTATA.

Dasypus gigas. Notes on the skull by Giebel, Zeitschr. ges. Ntrwiss. 1867, xxx. p. 545.

Dasypus sexcinctus. Prof. Turner has described the brain. Journ. of Anat. & Physiol. 1867, i. pp. 313-315.

Myrmecophaga jubata. M. Pouchet has described the anatomy of the fore limb. Compt. Rend. 1867, July 1, pp. 34–37.

PACHYDERMATA.

Rhinoceros. Dr. Gray has examined the specimens in the collections of the British Museum and Royal College of Surgeons, Proc. Zool. Soc. 1867, pp. 1003–1032. After some introductory remarks on the literature of this subject and the formation of the osteological collection in the British Museum, he gives a synopsis of the genera: in their definition as well as in the distinction of the species he has been essentially assisted by the examination of the skulls; he has been thereby enabled to distinguish three new species, the skulls of which are figured. Also fossil species are referred to the genera. The systematic arrangement is the following:—

I. *The skin divided into shields by well-marked folds. Skull with the intermaxillary free, elongate; upper cutting-teeth long; nasal bones produced, conical.* Asiatic Rhinocerotes.

1. Rhinoceros. Horn single, anterior. Lumbar and neck-folds of the skin well developed. Part of the occipital bone, near the occipital condyle, and the condyles themselves prominent.—To this genus are referred the three new species; and therefore we add the synopsis of all the species.

A. Forehead and nose behind the horn flat. (*Rhinoceros**.)

Nose square on the sides above; nasal short. *R. javanicus.*

Nose shelving on the sides above; upper jaw slightly contracted before the grinders.

Nasal broad, elongate. *R. unicornis.*

Nasal narrow, short. *R. nasalis*, sp. n., p. 1012, from Borneo.

Upper jaw much contracted before the grinders; nasal narrow, short. *R. floweri*, sp. n., p. 1015, from Sumatra.

B. Forehead and nose subcylindrical, shelving on the sides above; nasal elongate. (*Eurhinoceros**.) *R. stenocephalus*, sp. n., p. 1018, hab. — ?

2. Ceratorhinus. Horns two, one behind the other. Lumbar and neck-folds of the skin rudimentary. Occipital end of the skull flat. Condyle not prominent. *R. sumatranus* = *R. crossii.*

II. *Skin uniform, not divided into shields. Horns two. Skull:—internasa*

* The author informs me that these two subgeneric names have been reversed in the original, and that they should be placed as in this abstract.

cartilaginous; intermaxillary free, very small; upper cutting-teeth none; nasal bones broad, rounded. African Rhinocerotes.

3. Rhinaster. Head short, compressed; upper lip with a central prominence. Skull short behind; occiput erect; nasal bones rounded in front; lower jaw thick in front; grinders small, in arched series. *R. bicornis* and *R. keitloa* = *R. camperi.*

4. Ceratotherium. Head elongate, truncated; upper lip square. Skull elongate and produced behind; occiput erect, produced above; nasal bones broad, convex, truncated, and sharp-edged in front; lower jaw tapering in front; grinders large, in straight lines. *R. simus* (? = *gordonii*, Blainv.) and *R. oswellii.*

III. *Skin uniform, not divided into shields. Horn single. Skull*:—*internasal bony; nasal, internasal, and intermaxillary all united into one mass.* Asia and Europe. Fossil.

5. Cœlodonta.

Hippopotamus amphibius. Gratiolet's work on the anatomy has been mentioned above, p. 5.—Dr. Crisp has written on the anatomy of the Hippopotamus, particularly on that of the skin and viscera. Proc. Zool. Soc. 1867, pp. 601–612, 689–695. The accompanying woodcuts are very bad.

Potamocharus edwardsi, sp. n., Grandidier, Rev. et Mag. Zool. 1867, p. 318, Madagascar.

Sus madagascariensis, sp. n., Grandidier, *l. c.* p. 85.

Sus taivanus (Swinhoe) may be identical with *Sus leucomystax* of Japan. Sclater, Proc. Zool. Soc. 1867, p. 240. (See Zool. Record, iii. p. 35.)

Tapir. Dr. Gray has examined the skulls of the species of Tapir, Proc. Zool. Soc. 1867, pp. 876–886. He points out the craniological characters by which the species may be distinguished, and also records the differences of the skulls of different ages. He directs attention to the fact that, whilst in most mammals the second series of incisors are developed rather within the base of the milk-series, in the Tapirs they are developed so far within their hinder edge that, when the milk-series are about to be shed, and the permanent series are just about being developed, there are two distinct series of apertures to be observed in the intermaxillary and the front edge of the lower jaw. The arrangement of the *Tapiridæ* is the following :—

Tribe I. Tapirina. 1. *Tapirus*, with *T. terrestris*, *T. laurillardi*, sp. n., from Venezuela (?), p. 881, established from a skull, which is figured; and *T. pinchacus* (*villosus*). 2. *Rhinochœrus*, with *R. sumatranus* and *R. me.*

Tribe II. Elasmognathinæ. 1. *Elasmognathus* with *E. bairdii*, pl. 42, representing the old and young animal.

Tapirus bairdii is found north of the Chagres River, Dow, Proc. Zool. Soc. 1867, p. 241.—Mr. Gill describes the characters on which his genus *Elasmognathus* is founded. Sillim. Journ. 1867, xliii. p. 370.—Mr. Verrill describes the young, ibid. xliv. p. 126.

Elephas. We mention here a memoir entitled "Description of the Remains of three extinct species of Elephant" in the Island of Malta, by Prof. Busk (Trans. Zool. Soc. vi. pp. 227–306), because numerous references are made to the osteology of the recent species.

Elephas indicus. Sir E. Tennent's work on the Elephant of Ceylon has been mentioned above, p. 5.

Equus caballus. M. G. Arloing has published contributions to our knowledge of the organization of the foot of the horse, Ann. Sc. Nat. 1867, viii. pp. 55–81; he figures cases of monstrosities of feet with additional toes, pls. 1 & 2.—"El Kamsa. Il cavallo arabo puro sangue di CARLO GUARMANI DI LIVORNO, 2ª edizione, Gerusalemme 1866," is known to us from the title only.

RUMINANTIA.

The researches of Prof. RÜTIMEYER into the history and races of the Domestic Cattle have a much wider bearing than the titles of the memoirs mentioned above (p. 11) indicate. He has been drawn into a number of collateral researches which are of the greatest importance to the student of the living as well as extinct Ruminants. The two parts on which these examinations are chiefly based are the skull and the dentition. Their study proves to him the correctness of the theory of a gradual evolution of the species, as of the development of an individual. The fœtal skulls of all Ruminants are the more similar to one another, the less their age. With the progress of development they diverge into a variety of modifications. Some forms, like the Domestic Cattle, are distinguished by the extraordinary variations and modifications of their adult skulls, whilst others, like the Musk-deer, retain the embryonological characters; morphologically the one may be termed very old, the others very young. As regards the dentition, the author regards the milk-dentition as a character of the highest importance in judging of the relationship between recent forms and their extinct predecessors. The milk-dentition is the dentition *inherited*, whilst the permanent teeth are the result of the adaptation of the species during a later period of its development. Thus, for instance, the dentition of the extinct *Anchitherium* reappears in the milk-dentition of the more recent *Hipparium*; the dentition of *Tragulus* and *Hyomoschus* is the milk-dentition of *Anoplotherium*, *Xiphodon*, and *Dichodon*, &c.

With regard to the Domestic Cattle, the author thinks that the various European varieties can be referred to three races:—1. *Bos primigenius*, represented chiefly in North Germany, Holland, the wild cattle of England, and some of the domestic varieties of the same country, and the long-horned varieties of Hungary and Italy. 2. *Bos brachyceros* or *longifrons*, represented by the "Braunvieh" in Switzerland and some parts of Germany. 3. *Bos frontosus*, represented by the spotted varieties in Switzerland and Germany. There is no doubt that the *primigenius*-race is the direct descendant from the *Urus*, whilst the *frontosus*-race, which evidently existed in a domesticated state only, appears to be a modification of the *primigenius*, its

skull bearing all the characters of a not fully developed form. The *brachyceros*-race was domesticated nearly at the same period as the *primigenius*, but its origin is still unknown.

Camelopardalis giraffa. Mr. Sclater has published a list of the Giraffes that had been living in the Regent's Park since the first acquisition of these animals. Proc. Zool. Soc. 1867, p. 391.

Bos taurus. Mr. Goodman has described a three-toed Cow. Journ. of Anat. & Physiol. 1867, i. pp. 109–113.

Bos americanus. Hr. v. Xantus shows that the American Buffalo is frequently found in a domesticated state at settlements in the far west. He thinks that much better results would be gained with the individuals kept in European menageries if they were treated more in accordance with their natural habits. A spacious ground, green fodder, and protection from heat as well as cold are necessary conditions of a successful attempt at domesticating this species. Zoolog. Gart. 1867, pp. 92–96.

Ovibos moschatus. Mr. Dawkins has read a paper before the Royal Society on its affinities, skeleton, and geographical distribution. Abstract in Proc. Roy. Soc. 1867, pp. 516, 517.

Antilope. Dr. Gray has compared and figured the horns and skulls of *Procapra gutturosa* (Pall.), the Hwang-Yang or Yellow Sheep of Mongolia, and of *Procapra picticauda* (Hodgs.). Proc. Zool. Soc. 1867, pp. 244–246.

Antilope caudata, sp. n. (=*A. crispa*, Radde, not Temm.), A. Milne-Edwards, Ann. Sc. Nat. 1867, vii. p. 377, from North China.

Gazella sæmmerringi (Cretzschmar) figured by Sclater, Proc. Zool. Soc. 1867, pl. 37.

Oreas canna. Notes by Lord Hill and Mr. Sclater on the progress of its acclimatization in Proc. Zool. Soc. 1867, pp. 953, 954.

Kobus sing-sing. Dr. Murie describes and figures a specimen collected by the late Baron Harnier on the White Nile; and having compared it with specimens from other parts of Africa, he comes to the conclusion that the species ranges from Senegambia to Abyssinia, and southwards nearly to the equator. Proc. Zool. Soc. 1867, pp. 3–8, pl. 2.

Saiga tartarica (Pall.) figured by Sclater, Proc. Zool. Soc. 1867, pl. 17.

Cervus. Mr. Blyth describes and figures horns of *C. duvaucelli, schomburgkii*, and *eldi*, regarding *C. platyceros* (Gray) and *C. acuticornis* (Gray) as races of the latter species. Proc. Zool. Soc. 1867, pp. 835–842.

Dr. J. A. Smith has made some remarks on curious varieties in the antlers of *Cervus elaphus* and *dama*. Proc. R. Phys. Soc. Edinb. 1864–5, pp. 208–211.

Cervus capreolus. Giebel on a monstrosity, Zeitschr. ges. Ntwiss. xxix. p. 503.

Cervus dama. A male was deprived of the new horns two days after the old horns had been shed. The operation had no effect whatever on the generative functions of the animal. M. Schmidt, Zoolog. Gart. 1867, p. 314.

Cervus eldi. Lieut. Beavan has published notes on the natural history of the Panolia Deer or Thamyn. Proc. Zool. Soc. 1867, pp. 759–766.

Cervus cameloides, sp. n., A. Milne-Edwards, Ann. Sc. Nat. 1867, vii. p. 377, from Mandschuria.

Cervus tarandus. A Society has commenced a very promising attempt at introducing the Reindeer in the Upper Engadin. Zool. Gart. 1867, pp. 114–119.

Hyomoschus aquaticus. Mr. Flower has examined the visceral anatomy, directing attention to a peculiar structure of the larynx (consisting especially in the extraordinary development of the thyroid cartilage), and to the presence of a rudimentary psalterium. Proc. Zool. Soc. 1867, pp. 954–960.

CETACEA.

Mr. Flower has, on the occasion of his researches into the osteology and systematic position of *Inia* and *Pontoporia*, exposed his views on the division of the animals of this order. Trans. Zool. Soc. vi. 1867, pp. 109–115. After having recapitulated the principal distinctive characters of the two suborders *Mystacoceti* and *Odontoceti*, he directs attention, for the further subdivision of the latter, especially to the ossified or cartilaginous condition of the sterno-costal elements, a peculiar mode of attachment of the ribs to the vertebræ being constantly found associated with the sterno-costal bones. The following arrangement of the *Odontoceti* is proposed :—

Fam. 1. Physeteridæ. Costal cartilages not ossified. The hinder ribs losing their tubercular and retaining their capitular articulation with the vertebræ. The greater number of the cervical vertebræ ankylosed together. Pterygoid bones thick, produced backwards, meeting in the middle line, and not involuted to form the outer wall of the postpalatine air-sinus. Symphysis of mandible of moderate or excessive length. No functional teeth in upper jaw. Mandibular teeth various, often much reduced in number. Lachrymal bones usually large and distinct. Bones of the skull raised so as to form an elevated prominence or crest behind the anterior nares. Orbit of small or moderate size. Pectoral limbs small. Dorsal fin usually present.

Subfam. 1. *Physeterinæ* with *Physeter* and *Kogia*.

Subfam. 2. *Ziphiinæ* with *Hyperoodon*, *Berardius*, *Ziphius*, *Dioplodon*, and *Micropteron*.

Fam. 2. Platanistidæ. Costal cartilages not ossified. The tubercular and capitular articulations of the ribs blending together posteriorly. Cervical vertebræ all free. Pterygoid bones thin, not conforming in their mode of arrangement with either of the other sections. Jaws very long and narrow; both with numerous teeth having compressed fangs. Symphysis of mandible very long, exceeding half the length of the entire ramus. Orbit very small. Lachrymal bones not distinct from the jugal. Pectoral limbs large. Dorsal fin rudimentary.

Subfam. 1. *Platanistinæ*. Maxillary bones supporting large bony incurved crests. No cingulum or tubercle at the base of the crown of the teeth. Pectoral fins truncated. Visual organs rudimentary. External respiratory aperture longitudinal, linear. *Platanista*.

Subfam. 2. *Iniinæ*. Maxillary crests absent, or very slightly developed. Many of the teeth with a complete cingulum, or a distinct tubercle at the base of the crown. Pectoral fin ovate, obtusely pointed. *Inia* (and *Pontoporia*?).

Fam. 3. Delphinidæ. Costal cartilages firmly ossified. Posterior ribs

losing their capitular articulation, and only uniting with the transverse processes of the vertebræ by the tubercle. Anterior (2-6) cervical, in most, ankylosed together. Pterygoid bones short, thin, involuted to form, with a process of the palatine bone, the outer wall of the postpalatine air-sinus. Numerous teeth in both jaws (*Monodon* excepted), sometimes deciduous. Symphysis of mandible short or moderate, never exceeding one-third the length of the ramus. Bones of the skull not raised into a distinct crest behind the anterior nares. Orbit of moderate size. Lachrymal bones not distinct from the jugal. Pectoral limbs varying much in form and size. Dorsal fin usually present.

Subfam. 1. *Beluginæ*, with *Monodon* and *Beluga*.

Subfam. 2. *Delphininæ*.

Prof. Lilljeborg, in his memoir quoted above, p. 10, characterizes the groups and genera of the Whalebone-Whales, shortly reviewing the species known at present. He does not acknowledge Gray's genera *Benedenia* and *Cuvierius*, but proposes a generic division, *Flowerius*, for *Sibbaldius borealis* (Gray). [This species being the type of *Sibbaldius* (Gray), *Flowerius* is synonymous with, and equivalent to, *Sibbaldius* (Gray) *sensu strictiori*; whilst *Sibbaldius* (Lilljeb.) is identical with *Rudolphius* (Gray).]

Prof. Burmeister's observations with regard to the ejection of water from the blowholes by Whales lead to the same result as those of Prof. von Baer (see Zool. Record, i. p. 32). The Dolphins, in which the blowhole is provided with a valve, are prevented by this structure from driving out air or water. Zeitschr. ges. Ntrwiss. xxix. p. 405.

We mention here that Mr. Cope has published a synopsis of the extinct Cetacea of the United States in Proc. Ac. Nat. Sc. Philad. 1867, pp. 144–155.

Hunterius swedenborgii, sp. n., Lilljeborg, *l. c.* pls. 9–11, a subfossil species discovered about 80 miles from the coast, in West Gothland, 300 feet above the level of the sea.

Prof. Lilljeborg (*l. c.*) thinks that Malm's *Balænoptera carolinæ* is a *Physalus antiquorum*. [Before a meeting of the Zoological Society of London (1868), Mr. Flower expressed it as his opinion that it is identical with *Cuvierius sibbaldii*.]

Physalus patachonicus. Notes on the example in the Buenos Ayres Museum, by Burmeister, Zeitschr. ges. Ntrwiss. xxix. p. 8.

Balænoptera. A short note, by Mr. Flower, on the rudimentary pelvis and unossified femur, in Bull. Acad. Sc., Lett. etc. Belg. 1866, xxi. p. 131.

Balænoptera (*Eschrichtius*) *robusta* (Lilljeb.). Prof. Lilljeborg (*l. c.*) gives a detailed description of this apparently extinct whale. The bones are figured on pls. 1–8.

Balænoptera rostrata. Dr. A. Carte and Dr. A. Macalister have read before the Royal Society a paper on the anatomy of this Cetacean. An abstract of it appeared in Proc. Roy. Soc. 1867, xvi. pp. 64, 65.

Balænoptera bonaërensis, sp. n., Burmeister, Proc. Zool. Soc. 1867, pp. 707–713, from Buenos Ayres.

Physeter macrocephalus. Mr. J. H. Thomson states that the frequent cases of deformity of the lower jaw (see Zool. Record, ii. p. 49) are found in male examples only, and caused by their mode of fighting, which is with their jaws mostly. Proc. Zool. Soc. 1867, p. 246.—The same malformation is also noticed and figured by Fischer in Robin, Journ. Anat. et Phys. 1867, p. 382, pl. 13.

Physeter simus. A note by Sir W. Elliot with regard to a faulty figure of this species is published in Trans. Zool. Soc. vi. pp. 171–174. See Zool. Record, iii. p. 40, footnote.

Ziphius. M. P. Fischer describes the remains of *Z. cavirostris*, Nouv. Arch. Mus. iii. pp. 41–78, pl. 4. On this occasion he enters into a critical revision of the existing and fossil Ziphioids generally, considerably reducing the number of genera and species established by authors. With regard to recent forms:—1. Cuvier's genus Ziphius comprises four species only, viz. *Z. cavirostris* (Cuv.), *Z. gervaisii* (Duvern.), *Z. indicus* (Van Bened.), and *Z. cryptodon* (Burm.). 2. Hyperoodon (Lacép.); the author considers *H. latifrons* (Gray) and *H. philippii* (Cocco) to be probably founded on old and young individuals of *H. butzkopf.* 3. Berardius (Duv.). 4. Mesoplodon (Gerv.) with *M. sowerbyensis* (Blainv.), *M. europæus* (Gerv.), *M. densirostris* (Duv.), and *M. layardi* (Gray).

Mesoplodon sowerbiensis. M. van Beneden figures the lower jaw of an example found on the coast of Norway, and enumerates the remains of the species preserved in the various museums. Bull. Ac. Sc. Lett. Belg. xxii. 1866, pp. 218–221.—A specimen cast ashore on the coast of Kerry (Ireland), Ann. & Mag. Nat. Hist. 1867, xix. p. 304; on the same example, W. Andrews, Proc. Roy. Ir. Acad. x. 1867, p. 51.

Epiodon patachonicum [quære, *us*?] is the name proposed now by Prof. Burmeister for his *Ziphiorhynchus cryptodon*, Zeitschr. ges. Ntrwiss. xxix. p. 5. He describes the skeleton, and explains, on this occasion, the asymmetrical structure of the nasal opening in this species and other Delphinoids by the presence of the large air-sac, which gradually pushes the nasal opening towards the left side.

Inia geoffrensis. Mr. Flower has given a most detailed description of this Cetacean, Trans. Zool. Soc. vi. 1867, pp. 87–106, accompanied by excellent figures, pls. 25–27.

Pontoporia blainvillii. The skull is described and figured by Flower, *l. c.* pp. 106–109, pl. 28.—Dr. Burmeister has published a preliminary description of the skeleton, tongue, larynx, and stomach of this Cetacean in Proc. Zool. Soc. 1867, pp. 484–489. On the same subject in Zeitschr. ges. Ntrwiss. xxix. pp. 1 & 402.

Delphinus. Prof. Burmeister has published remarks on the species in the Museum of Buenos Ayres, Zeitschr. ges. Ntrwiss. xxix. They refer to *Delphinus microps*, p. 2, which he regards as identical with *D. walkeri* (Gray), *D. obscurus*, p. 3, *D. eurynome* and *D. spinipinnis*, p. 4.

Delphinus delphis. Prof. Reinhardt reports on an example obtained on the eastern coast of Jutland, and figures it. Vid. Meddel. naturk. Fören. Kjöbenh. 1866 (1867), Nr. 10, tab. 5.

Phocæna communis. On the anatomy of the retina see Hulke, Journ. of Anat. & Physiol. 1867, i. pp. 19–25.

Globiocephalus svineval. Prof. Turner has contributed to the anatomy, Journ. of Anat. & Physiol. 1867, i. pp. 66–79.—A short account of the capture of a shoal of this Whale in the Firth of Forth, April 26, 1867, is given by Mr. Alsten in the Zoologist, 1867, pp. 801–803.—Dr. Macalister has examined and described the myology of a young example, Proc. Zool. Soc. 1867, pp. 477–482.

Rhytina stelleri. The organ of hearing is described by Prof. Claudius, Mém. Ac. Sc. St. Pétersb. 1867, xi. no. 5, with two plates.

Prof. Brandt has published some additional notes on the distribution and extinction of this animal. Bull. Ac. Sc. St. Pétersb. xi. 1867, pp. 445–451.

MARSUPIALIA.

Mr. Flower has published an important paper on the development and succession of the teeth in the *Marsupialia*. He has examined very young examples of the types of six families, and found that, in this subclass, the teeth do not vertically displace and succeed other teeth, as in the other Mammalia, with the exception of a single tooth on each side of each jaw. The tooth in which a vertical succession takes place is always the corresponding or homologous tooth, being the hindermost of the premolar series, which is preceded by a tooth having the characters, more or less strongly expressed, of a true molar. The author then argues the question whether the milk-dentition of the typical diphyodont Mammals is represented in the Marsupials only by these four deciduous molars, or whether the large majority of the teeth of the Marsupials are the homologues of the milk-teeth of the diphyodonts, in which case the four successional premolars of Marsupials would be the feeble representatives of the permanent dentition of the diphyodonts. The author is inclined to assume the former as the true solution of the question, which, however, will require further confirmation from examination of examples in phases of development earlier than those at his disposal. Philos. Trans. clvi. pp. 631–641; abstract in Proc. Roy. Soc. 1867, pp. 464–468. The paper is illustrated by plates 29 & 30. The simple plan of marking the different sets of teeth with different colours renders the subject very perspicuous, and we trust that it will be followed on all similar occasions.

Dr. Peters communicated to the Academy of Sciences in Berlin and to the Zoological Society of London a note on the relation of the tympanic bone to the mandible in the Marsupials, stating that he had found in a young *Hulmaturus bennettii* (85 millims. long without tail) and in a young *Didelphys*, that the former bone is inserted into the cavity formed by the angle of the latter. He considered that this temporary glenoid surface is to be compared with the permanent glenoid cavity in birds, or at least to a part of it, as it is well known that relations which are permanent in lower animals are often

represented by a temporary condition during the period of evolution in higher classes. In the author's opinion this observation tends to confirm the view that so important and constant a bone as the tympanic is in the Mammalia does not disappear at once in other vertebrates. It also obviates one of the principal objections urged against the homology of the os tympanicum with the quadrate bone of birds and reptiles, viz. that it is never united to the lower jaw. At the same time it explains the peculiar form of the angle of the lower jaw in the Marsupials. Proc. Zool. Soc. 1867, p. 953; Monatsber. Ak. Wiss. Berl. 1867, pp. 725–729 (translated in Ann. & Mag. Nat. Hist. 1868, i. p. 390).

In the *Monotremata*, a bone composed of two or more pieces presents the same articular connexions as the *os quadratum* in birds, the *os tympanicum* effecting the union with the pterygoid, and the malleus and incus, or the incus alone, that with the squama temporalis. Ibid. pp. 779–781 (translated in Ann. & Mag. *l. c.* p. 390).

Halmaturus. Mr. E. G. Hill has confirmed by actual observation Prof. Owen's statement that the lips or mouth are used for the transmission of the fœtus into the pouch, the fore paws aiding only in keeping open the pouch. Proc. Zool. Soc. 1867, pp. 475–477.—Dr. Lucä has examined the female genital organs of two old *Halmaturi* (*H. billardieri* and *H. bennettii*) and of a not full-grown *H. bennettii*. After an historical sketch of the researches on this subject, he gives the results of his own examination. He found an open communication between the median vagina and the urethro-genital canal in the old examples, whilst there was no such aperture in the younger one. The organs of a *H. billardieri* are figured. Zool. Gart. 1867, pp. 418–424, 471–474. [See also Zool. Record, iii. p. 42.]

Halmaturus giganteus and *bennettii*. Some remarks on the skull and skeleton by Giebel, Zeitschr. ges. Ntrwiss. xxix. p. 89.

Perameles (*Macrotis*) *lagotis*. Dr. Max Schmidt has given a very interesting account of two specimens living in the Frankfort Zoological Garden. He has added detailed abstracts from the literature regarding the natural history and anatomy of this animal. Zoolog. Gart. 1867, pp. 1–12, 41–56, 81–92. On a plate three views of the animal are given from life.

Gymnobelideus, g. n., M'Coy, Ann. & Mag. Nat. Hist. 1867, xx. p. 287. Teeth and general form of *Belideus*, but destitute of the lateral cloak-like parachute or flank-membrane, and having on the fore feet the inner finger or thumb shortest, the second longer, the third longer than the second, the fourth longest, the fifth or outer toe shorter than the third, but longer than the second. On the hind feet the inner toe or thumb is succeeded by two of nearly equal size, more slender and shorter than the others, and united together as far as the base of the last joint. The thumbs of the hind feet are without nails; and the claws of all the other toes are small, and exceeded in length by the prominent wrinkled pads on the underside. The ears are large, semielliptical, and nearly naked towards the tips. Dental formula:—incisors $\frac{3}{1}$, canines $\frac{1}{0}$, premolars $\frac{3}{4}$, molars $\frac{4}{4}=40$.—*Gymnobelideus leadbeateri*, sp. n., M'Coy, *l. c.* pl. 6, from the Bass River, Victoria.

Phascolomys. Prof. M'Coy has examined skins and skeletons of the various species. He supplements Dr. Murie's observations by notes on the os sacrum and vertebræ, and retains *Ph. setosus* (Gray) as a distinct species.

Trans. & Proc. R. Soc. Victoria, part 2, vol. viii. pp. 266–270.—Dr. Murie has continued his researches into the characters and structure of the species of this genus (see Zool. Record, ii. p. 51) in Proc. Zool. Soc. 1867, pp. 798–815. This paper is more especially devoted to *Ph. platyrhinus*, of which a description of the external characters and of the skeleton is given. It can only be recognized as specifically distinct from *Ph. wombat* in a zoological sense. Plate 35 represents the adult and young.

Didelphys. Dr. Hensel has made observations as regards the manner in which the young adhere to the teats of the mother. The lateral portion of the cleft of the mouth is closed, and there is only a round opening in front. It would appear, from a distinct line between the coalesced upper and lower lips, that the cleft is wide open in the embryo before birth, and that the lips coalesce from the angle of the mouth after the young animal has seized the teat. The teat is soft, somewhat tapering, not swollen at the extremity, and long enough to reach into the pharynx of the young. The young adheres by the claws of the fore legs, which are much more advanced in development than the hind limbs. Sitzgsber. Ges. ntrf. Freund. Berlin, 1867, Feb. 19, p. 5.

Didelphys azaræ and *aurita*. Notes on their distinctive characters and natural history by Dr. Hensel in Zool. Gart. 1867, pp. 290–293.

AVES

BY

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THOUGH exceeding in bulk that of its predecessors, the ornithological literature of 1867 seems somewhat to fall off as regards special results. Nevertheless the past year has produced Prof. Huxley's remarkable attempt to construct a systematic arrangement of Birds based on firm, because really philosophical grounds; and the value of this scheme cannot be overrated. If it does not at once set forth a classification entirely satisfactory, it is at least a vast stride in the direction of one. The effects on ornithology of Mr. Layard's long-expected 'Birds of South Africa' are likely, especially in the country to which it refers, to be very considerable, though it has not been elaborated with the amount of care which the difficulties of the subject required. On the other hand, in the work of Dr. Hartlaub and Mr. Finsch on the ornithology of Central Polynesia everything which literary skill and profound knowledge can supply is furnished; but, from the nature of the case, it will hardly be the starting-point of a new school of ornithologists, as may reasonably be expected of Mr. Layard's volume. The first portion of Mr. Finsch's monograph of Parrots is a model both of conception and execution; while the completion of Mr. Eyton's 'Osteologia Avium,' the commencement of Prof. Alphonse Milne-Edwards's 'Oiseaux Fossiles,' and the publication of Mr. Sclater's edition of Nitzsch's 'Pterylography' mark the year as one of great importance as regards the generalities of ornithology. As before, we have to acknowledge the receipt of much valuable help from our fellow workers in almost all countries, who have thereby rendered our 'Record' far more complete than it would otherwise have been; and we have included in it many notices properly belonging to previous years, which, from one cause or another, have hitherto been overlooked.

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HARTLAUB, GUSTAV. Bericht über die Leistungen in der Naturgeschichte der Vögel während des Jahres 1866. Archiv für Naturg. Jahrg. xxxiii. Band ii. pp. 32. Berlin: 1867.

Little more need be said of this Report than that it is a worthy successor of the long series of its predecessors. Its author's experience enables him to compress his information into limits so small that it would be highly dangerous for a person with less practice to attempt the like; but, though he does not enter minutely into details, we have noticed no serious omissions on Dr. Hartlaub's part, and we have to thank him for the kind manner in which he is pleased to speak of our own previous 'Records.'

Arrigoni, Oddo. La Storia dell' Ornitologia. Capo I. Atti Soc. Ital. Sc. Nat. x. pp. 136–144.

This, the first chapter of a history of ornithology, contains notices of the works of Aristotle, Pliny, Belon, and Gesner.

Blyth, E. The Ornithology of India.—A Commentary on *Dr. Jerdon's* 'Birds of India.' [See "Indian Region."]

Cassin, John. Fasti Ornithologiæ, No. 3.—'Encyclopædia Londinensis.' Proc. Acad. Philad. 1867, pp. 212–221.

The 'Encyclopædia' was published between 1795 and 1829, and was "compiled, digested, and arranged by John Wilkes . . . assisted by eminent scholars." Mr. Cassin maintains that the names in it bestowed upon various birds for the first time should stand; but not knowing who the editors of the ornithological portion of it were, he holds the compiler responsible for the nomenclature, and proposes to alter the names of about thirty species of birds in favour of those previously (for the dates are given on the plates) given to them by this anonymous authority. (*Cf.* Ibis, 1868, p. 231.)

Harting, J. E. The Birds of Shakespeare. Zoologist, Second Series, pp. 529–536, 649–667.

The conclusion of a series of papers noticed last year (Zool. Rec. iii. p. 45).

——. A Review of Systems. *Tom. cit.* pp. 584–589.

That of Yarrell is most commended.

Heuglin, M. T. von. Ueber die ornithologischen Arbeiten des Herzogs Paul Wilhelm von Würtemberg, u. s. w. [See "Ethiopian Region."]

Sclater, P. L. Remarks on *Dr. Léotaud's* 'Birds of Trinidad.' Ibis, 1867, pp. 104–108. [See "Neotropical Region."]

Sundevall, C. J. Les Oiseaux d'Afrique de Levaillant, critique de cet ouvrage. Rev. et Mag. de Zool. 1867, pp. 76–78, 116–122, 188–92, 218, 219, 251–254, 303–305.

A continuation of M. Olph-Galliard's translation before noticed (Zool. Rec. iii. p. 45).

THE GENERAL SUBJECT.

Altum, B. Aberrationen. Journ. für Orn. 1867, pp. 85–89.

An enumeration of various abnormally coloured birds which have come under the author's observation.

Cope, E. D. An Account of the Extinct Reptiles which approached the Birds. Proc. Acad. Nat. Sc. Philadelphia, 1867, pp. 234, 235.

A very brief abstract of what must have been a most interesting and valuable paper. The approximation was at two points—the first by the *Pterosauria*, to which *Archæopteryx* had affinity. The second by the *Dinosauria* of the orders *Goniopoda* and *Symphypoda*. This was chiefly manifest by the bones of the hind limbs. The most bird-like of the Connecticut tracks were made by *Bathygnathus*, which had a more or less erect position. The separated metatarsals of the *Spheniscidæ* make an approach to the structure of the bird-like Reptiles; but the author was unable to indicate whether the closest approximation was here or among the *Ratitæ*.

Crommelin, J. P. van Wickevoort. Contributions à l'hybridologie ornithologique. Arch. Néerl. ii. pp. 447–452.

Droste, Ferd. von. Das Reichsmuseum zu Leyden. Journ. für Orn. 1867. pp. 352–355.

——. Crommelin's Museum. *Tom. cit.* pp. 355, 356.

Brief notices of the well-known Museum at Leyden, and the less-known collection of Heer Crommelin at Haarlem.

Hartt, C. Frederick. The Recent Bird-Tracks of the Basin of Minas. American Naturalist, 1867, pp. 169–176, 234–243.

An agreeably written paper, but containing nothing of very great novelty or importance. That the commonly received explanation of the process by which fossil bird-tracks are produced is correct is shown by the author's experience of recent similar markings.

Hösselbarth, G. Vergleichende Uebersicht der Vögel. Mittheilungen aus dem Osterlande, Bd. xviii. (1867) pp. 67–86.

A treatise of an elementary nature, in the form of a lecture delivered to the Natural History Society which meets at Altenburg.

Hutton, F. W. Notes on the Birds seen during a Voyage from London to New Zealand in 1866. Ibis, 1867, pp. 185–193.

These form a worthy sequel to the author's former paper (Zool. Rec. ii. p. 56). About 20 species (all but one belonging to *Procellariidæ*) are noticed, some of them not determined, and among them two, or perhaps more, which may be new

species, but which he most judiciously refrains from describing. The results of some experiments in marking birds, to see how long they continue in company with a ship, are detailed, but these we cannot hold to be quite conclusive. More satisfactory are the observations showing that these ocean wanderers pass the night on the water. Much benefit would be derived, however, if there were more exact and trustworthy observers such as Capt. Hutton.

Huxley, Thomas H. On the Classification of Birds; and on the Taxonomic Value of the Modifications of certain of the Cranial Bones observable in that Class. Proc. Zool. Soc. 1867, pp. 415–472.

This paper, so far as we are aware, is immeasurably the most important that has appeared during the past year; and its effects on the future progress of ornithology can hardly be estimated. After briefly recapitulating the principal characters possessed in common by *Aves* and *Reptilia*, causing them to be regarded by the author as forming one primary group of Vertebrates, to which he has applied the name *Sauropsida*, and then the characters distinguishing Birds from Reptiles, he divides *Aves* into *three* orders:—(I.) Saururæ, Häckel, (II.) Ratitæ, Merrem, and (III.) Carinatæ, Merrem. The *Saururæ* have the metacarpals well developed and not anchylosed, and the caudal vertebræ are numerous and large, so that the caudal region of the spine is longer than the body. The furculum is complete and strong, the feet very Passerine in appearance. The skull and sternum are unknown; indeed the whole Order rests entirely on the celebrated unique fossil *Archæopteryx* (Phil. Trans. 1863, pp. 33–47, pls. i.–iv.), and is without doubt entirely extinct. The *Ratitæ* comprehend the Struthious birds, and differ from all others in the combination of several peculiarities. The sternum has no keel, and ossifies from lateral and paired centres only; the axes of the scapula and coracoid have the same general direction; certain of the cranial bones have characters very unlike those possessed by the next order—the vomer, for example, being broad posteriorly and generally intervening between the basisphenoidal rostrum and the palatals and pterygoids; the barbs of the feathers are disconnected; there is no inferior larynx; and the diaphragm is better developed than in other birds. The *Ratitæ* are divided into five groups, separated by very trenchant characters, principally osteological, those afforded by the cranial bones being illustrated by a series of figures. These groups contain (i) *Struthio**, (ii) *Rhea*, (iii) *Casuarius* and *Dromæus*, (iv) *Dinornithis*, and (v) *Apterygidæ*; but no names are given to

* The old names of the genera or larger groups in the present abstract must be understood in the same sense as that in which they have been used in this 'Record' for previous years.

them. The *Carinatæ* contain all other existing birds. The sternum has more or less of a keel, and ossifies (except possibly in *Strigops*) from a median centre as well as from paired and lateral ones. The axes of the coracoid and scapula meet at an acute or, as in *Didus* and *Ocydromus*, at a slightly obtuse angle, while the vomer is comparatively narrow and allows the pterygoids and palatals to articulate directly with the basisphenoidal rostrum. The *Carinatæ* are divided, according to the formation of the palate, into four groups or "suborders" and named (i) *Dromæognathæ*, (ii) *Schizognathæ*, (iii) *Desmognathæ*, and (iv) *Ægithognathæ*. The *Dromæognathæ* resemble the *Ratitæ* in their palatal structure, and are composed of the family *Tinamidæ*. The *Schizognathæ* include a great many forms usually placed in *Gallinæ*, *Grallæ*, and *Anseres*. In this "suborder" the vomer, however variable, always tapers to a point anteriorly, while behind it embraces the basisphenoidal rostrum between the palatals; but neither these nor the pterygoids are borne by its posterior divergent ends. The maxillo-palatals are usually elongated and lamellar, uniting with the palatals, and, bending backward along their inner edge, leave a fissure (whence the name of the "suborder") between the vomer and themselves. Six groups of *Schizognathæ* are distinguished with considerable minuteness:—(1) *Charadriomorphæ*, containing *Charadriidæ*, *Otididæ*, and *Scolopacidæ*; (2) *Geranomorphæ*, including *Gruidæ* and *Rallidæ**, between which *Psophia* and *Rhinochetus* are intermediate; (3) *Cecomorphæ*, comprising *Laridæ*, *Procellariidæ*, *Colymbidæ*, and *Alcidæ*; (4) *Spheniscomorphæ*, composed of *Spheniscidæ*; (5) *Alectoromorphæ*, being all the *Gallinæ* except *Tinamidæ*; and, finally, (6) *Peristeromorphæ*, consisting of the *Columbæ*. In the *Desmognathæ* the vomer is either abortive or so small as to disappear from the skeleton. When it exists it is always slender and tapers to a point anteriorly. The maxillo-palatals are united (whence the name of the "suborder") across the middle line, either directly or by the ossification of the nasal septum. The posterior ends of the palatals and anterior of the pterygoids articulate directly with the rostrum. The groups of *Desmognathæ* are characterized as carefully as those of the last "suborder" and are as follows:—(1) *Chenormorphæ*, consisting of *Anatidæ* with *Palamedea* (*cf.* Zool. Rec. iii. p. 111, note); (2) *Amphimorphæ*, composed of *Phœnicopteridæ*; (3) *Pelargomorphæ*, containing *Ardeidæ*, *Ciconiidæ*, and *Tantalidæ*; (4) *Dysporomorphæ*, coextensive with *Pelecanidæ*; (5) *Aetomorphæ* and (6) *Psittacomorphæ*, identical respectively with *Accipitres* and *Psittaci*; and, lastly, (7) *Coccygomorphæ*, which is held to include four groups, viz.:—(a) *Coliidæ*, (b) *Musophagidæ*, *Cuculidæ*, *Bucconidæ*, *Rhamphastidæ*, *Capitonidæ*, *Galbulidæ*, (c)

* *Dicholophus* also would appear to be referred here (p. 455).

Alcedinidæ, *Bucerotidæ*, *Upupidæ*, *Meropidæ*, *Momotidæ*, *Coraciidæ*, and (d) *Trogonidæ*. Next in order come the *Celeomorphæ* (= *Picidæ*), a group respecting the exact position of which Prof. Huxley is uncertain, though he is inclined to suppose its affinities are with the *Ægithognathæ*, the fourth and last of his "sub-orders," characterized by a palatal structure in some respects intermediate in structure between the preceding ones. The vomer is broad, abruptly truncated in front, and deeply cleft behind, so as to embrace the rostrum of the sphenoid; the palatals have produced postero-external angles, the maxillo-palatals are slender at their origin, and extend obliquely inwards and forwards over the palatals, ending beneath the vomer in expanded extremities, not united either with one another or with the vomer. The anterior part of the nasal septum is frequently ossified, but this ossification is not united with the vomer. The *Ægithognathæ* are divisible into two groups: (1) *Cypselomorphæ*, including *Trochilidæ*, *Cypselidæ*, and *Caprimulgidæ*, and (2) *Coracomorphæ*, which last are separable into two groups (neither of which receives a name), one (*a*) formed of the genus *Menura*, which seems to stand alone, and the other (*b*) made up of (*α*) *Polymyoda*, (*β*) *Tracheophonæ*, and (*γ*) *Oligomyodæ*, sections founded on the laryngeal structure, but declared to be not natural. The *Coracomorphæ*, therefore, corresponds with the *Passeres* of this 'Record,' and contains by far the largest number of species.

Such, then, is a very brief abstract of this remarkable paper, which is admirably illustrated by woodcuts showing the various modifications of palatal structure described by the author. The only group with respect to which he enters into further details is that of the *Aetomorphæ*, which he divides into four primary groups (see special part under "ACCIPITRES"). That the principles of ornithological classification here laid down are not entirely new is no objection to them; for Prof. Huxley has gone much more thoroughly into the subject than did Dr. Cornay (L'Institut, xii. p. 21; Comptes Rendus, xviii. pp. 94, 95; Rev. Zool. 1847, pp. 360–369), whose labours have not generally been regarded with favour; but it does seem a question very much deserving of attention how far any approach to a natural system can be based on the modifications of one part of an animal's structure without any reference whatever to other portions of it. The present proposal, therefore, must be regarded as on its trial; but though it appears to us on the whole to result in a purely artificial system, it is undoubtedly of a very different kind from almost any that has before been suggested. There is in it no room for fancy, the statements are indisputable, and all that remains for consideration is whether they really possess the importance which their author assigns to them. But we value Prof. Huxley's investigations very much as tending to lead to a

more satisfactory arrangement than has yet been attained, and we shall be greatly mistaken if they have not this effect, though we may never reach the goal of a classification on Genetic principles, which can alone be the "System of Nature." (*Cf.* Journ. Anat. & Physiol. i. pp. 369–371, ii. p. 390; Ibis, 1867, pp. 254, 255, 1868, pp. 85–96, 357–362.)

Martens, E. von. Die Preussische Expedition nach Ost-Asien. Nach amtlichen Quellen. Erster Band—erste Hälfte. Berlin: 1865. Roy. 8vo, pp. 192.

The expedition sailed early in 1860; and this work gives a general account of the zoology of the places visited by the 'Thetis,' on board which the author was. Ornithology does not come in for many remarks; but that of the Madeiras is noticed (p. 8), and further on a list of the species found there is given (pp. 20, 21), chiefly from Mr. E. Vernon-Harcourt's (Ann. & Mag. Nat. Hist. 2nd ser. xv. pp. 430–438). Mention is successively made of the birds observed in the Tropical Atlantic (p. 27), at Rio Janeiro (pp. 35, 37), in the Southern Ocean (pp. 45–50), many of which were not identified, the Straits of Sunda (pp. 50–53), and Japan (pp. 62–68, 87–109, and 147)—a list being given from a Japanese encyclopædia of their names, and a pretty successful attempt at identifying the species included with scientific nomenclature being made. The birds of Northern China are afterwards mentioned (pp. 155, 156) and then those of Southern China (pp. 179, 180). Finally a list of birds observed in the Philippine Islands is begun (pp. 187–192), but left unfinished. This includes some of those given in the author's more detailed list (Zool. Rec. iii. p. 56); but descriptions of those then announced as new are not added. (*Cf.* Ibis, 1868, pp. 340, 341.)

Milne-Edwards, A. Recherches Anatomiques et Paléontologiques pour servir à l'histoire des Oiseaux Fossiles de la France. Livr. 1–17. Paris: 1867. 4to, pls.

This magnificent work, now in course of publication, is the prize-essay mentioned by us last year (Zool. Rec. iii. p. 47). After a chapter of general considerations comes one containing the author's notions of the osteology of birds, which is divided into sections, each treating of a portion of the skeleton (the leg, trunk, wing, and head)—a convenient arrangement of the subject, followed throughout the work. The osteological characters of the *Anatidæ* are next considered; and to this succeeds a description of the fossil species belonging to the family, first those of the tertiary epoch and next those of the "quaternary." A chapter follows on birds probably allied to the *Anatidæ*, where is lodged *Gastornis parisiensis**. The *Pelecanidæ* are treated in the same way, and then the *Colymbidæ* and *Podicipidæ*, under

* A more detailed memoir, by the same author, on this much-discussed form will be found in Ann. des Sc. Nat. 5e sér. Zool. vii. pp. 217–227.

the name of "Colymbides." These are succeeded by the "Longipennes" (*Laridæ* and *Procellariidæ*), in the midst of which the work at present breaks off. The plates are beautifully executed, and contain a marvellous amount of details, chiefly of the osteology, but some of the myology of birds, both recent and fossil. The new species described or figured will be found mentioned in the special part of this Record under their respective families as above named.

PARKER, W. K. On some Fossil Birds from the Zebbug Cave, Malta. Trans. Zool. Soc. vi. pp. 119–124, pl. xxx.

The specimens before mentioned (Zool. Rec. ii. p. 57) are described. Unfortunately the most interesting of them (the head of *Cygnus falconeri*, which was nearly a third larger than *C. olor*) is not figured.

PETTIGREW, J. B. On the various Modes of Flight in relation to Aeronautics. Journ. Roy. Inst. Gr. Brit. 22 March, 1867, pp. 14.

An abstract of a very interesting lecture delivered by the author, which has since appeared in the 'Linnean Transactions' for the present year; but the subject has too little of pure zoology in it to be here dwelt upon.

PUCHERAN, —. Sur les indications que peut fournir la Géologie, pour l'explication des différences que présentent les Faunes actuelles. Rev. et Mag. de Zoologie, 1867, pp. 161–169, 197–199, 257–271.

This series of articles (Zool. Rec. ii. pp. 58, 59, iii. p. 47) is at length concluded. In those above cited, the author, after enumerating the birds common to Algeria and North-eastern Africa, proceeds to name the species peculiar to the islands of Borneo, Sumatra, and Java, and finds he cannot determine the general characters by which the ornis of the one is distinguished from that of the others, any more than he can decide whether there is any physical or climatal harmony between the Indian Archipelago and its mammalian or ornithic inhabitants. It is evident, he says, that one of the islands has been a centre of distribution to the others. Geologists, then, must show which of them has existed first; and it is most probable that the three just named have once formed a continent. In this case it is easy to conceive that the slight differences separating the animals of one from those of the other have originated from the time when isolation began. The same problem can also be laid down with respect to Polynesia; and a few of the birds found in the Feejee, Salomon, and Samoan Islands are enumerated in support of the same view, the distribution of the *Columbæ* being especially dwelt upon. From a consideration of the mode in which the coral islands of the Pacific are formed, it is clear that the birds which inhabit them now did not exist there once; they must

therefore have come from elsewhere; and it is also proved that the larger the area such localities present the more diverse are the forms which inhabit them. The birds must have spread by migration; and it remains for geologists to point out the centre of distribution whence they have radiated, for it will then be proved that the differential characters they possess are due to the new conditions under which they found themselves.

Finally Dr. Pucheran asserts the unity of distribution of contemporary faunas. Setting out from one and the same centre, the different forms spread to places of very different physical conditions, the action of which has modified them to their present state. Geology, he conceives, will throw sufficient light on these changes to enable us to learn their history. (See above, "MAMMALIA.")

SCLATER, P. L., and SALVIN, OSBERT. Exotic Ornithology. Parts II.–IV. London: 1867. Imp. 4to, pp. 17–64, pls. ix.–xxxii.

Three parts of this work have appeared during the past year. The species figured are noticed under the families to which they belong. They are all from the New World; and a synopsis of the American species of the genera *Phlogopsis*, *Nyctibius*, *Cyphorhinus*, *Myiadestes* (now placed with the *Turdidæ*), *Hylactes*, *Œdicnemus*, and *Lanio* is given. (*Cf.* Ibis, 1867, p. 372, 1868, p. 335.)

[WALLACE, A. R.] Mimicry and other Protective Resemblances among Animals. Westminster Review. July, 1867, pp. 1–43.

Most of the examples cited are entomological; but a few are from birds, and the especially remarkable cases of the close superficial resemblance between *Mimeta bouruensis*, *M. forsteni*, *M. virescens*, and *M. phæochromus*, and the species of *Tropidorhynchus* (*T. bouruensis*, *T. subcornutus*, *T. timorensis*, and *T. fuscicapillus*), respectively inhabiting the same islands of Bouru, Ceram, Timor, and Morty, are dwelt upon. The facts also of the females of *Phalaropus fulicarius*, *Eudromias morinellus*, and of the genus *Turnix* being larger and more brightly coloured than the males are also quoted to prove the theory of "Sexual Selection."

WIESE, —. Die Vögel als Verkündiger des Wetters. Journ. für Orn. 1867, pp. 145–149.

This paper consists mostly of assertions, with some recorded facts, to show that birds can prognosticate changes of the weather.

PALÆARCTIC REGION.

ALLÉON, —. Note sur deux espèces d'Oiseaux qu'il convient d'introduire dans la faune européenne. Rev. et Mag. de Zool. 1867, pp. 3–7.

See "*Falconidæ*" and "*Columbidæ*." [*Cf.* Ibis, 1868, pp. 222, 223.]

Baldamus, E. Brutvögel im Ober- und Unter-Engadin. Zeitschr. für die gesammt. Naturwiss. lvi. (1867) pp. 99, 100.

Of about 80 species observed by the author, about 60 bred; a few notes on the more interesting of these are added.

Barboza du Bocage, J. V. A ornithologia dos Açores. Jornal de Sciencias da Acad. Real de Lisboa, 1866, pp. 89–92.

A review of the works of M. Morelet (Notice sur l'hist. nat. des Açores: 1860) and Mr. F. D. C. Godman (*cf.* Zool. Rec. iii. p. 50), the latter of whom the author takes to task for giving the vernacular names of the species incorrectly. He believes that *Fringilla moreleti* is identical with *F. tintillon*, and is inclined to doubt the specific validity of *Pyrrhula murina* (*cf.* R. Z. 1867, p. 376; Ibis, 1868, pp. 344, 345).

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: 1866–67. Folio. Fascicoli iv.–xv.

Since we last noticed this work (Zool. Rec. ii. p. 61) twelve more parts have appeared, of which the last five bear date 1867; and we find more in the letterpress than we at first supposed we should. There are some good remarks on the distribution of birds in Lombardy (pp. 14–16), and lists given of the characteristic species of the Alps, Mountains, and Plains of the province. Of about 270 species found in Lombardy, 174 are land-birds, 51 being residents, 67 summer visitants, 4 of double passage, 13 winter visitants, and 39 irregular, 96 are water-birds, 61 being resident or of double passage, and 35 irregular. The plates contain figures of a large number of eggs and young birds. (*Cf.* J. f. O. 1866, pp. 43–46, 1867, pp. 278–281; Ibis, 1868, p. 106.)

Bruhin, Th. A. Zur Wirbelthierfauna Vorarlbergs. Zoolog. Garten, 1867, pp. 434–437.

Gypaetus barbatus and *Nucifraga caryocatactes* are the most interesting of the species mentioned.

Bullmore, W. K. Cornish Fauna, a short account of all the Animals found in the County, with descriptions and remarks on the habits of many of the Rarer Birds, Fishes, &c. procured during the last Six Years. Truro: 1867. 8vo, pp. 64.

The ornithological portion is at pages 7–45. More than 280

species are stated to have occurred in the county; but the evidence as to some of them is not very satisfactory.

Cara, Gaetano. Osservazioni al Catalogo degli Uccelli di Sardegna pubblicato dal Dott^re^ Tommaso Salvadori. Cagliari: 1866. 8vo, pp. 152.

The author seeks to refute the charges of inaccuracy brought against him by Dr. Salvadori (Zool. Rec. i. pp. 44, 45), and criticises, in some cases very severely, the work of that naturalist. (*Cf.* Ibis, 1868, pp. 106, 107.)

Chauveau (—). Sur les principaux Oiseaux du Thibet. Bull. Soc. Impér. d'Acclimat. 1867, pp. 712–714.

The species, with few exceptions, are only designated by their native names; and the author, not being a professed naturalist, has failed to distinguish the characters of most of the others so as to make them recognizable.

Degland, C. D., Gerbe, Z. Ornithologie européenne ou Catalogue descriptif, analytique et raisonné des Oiseaux observés en Europe. Deuxième édition, entièrement refondue. Paris: 1867. 8vo, 2 vols. pp. 610 and 637.

The first edition of this work was published in 1849, and has long been known. The author, Dr. Degland, intended to bring out a supplement, in which he should refute the many charges brought against him by Bonaparte; but dying before this labour was performed, his papers devolved upon M. Gerbe, who has preferred bringing out a new edition of the whole, entirely recast, so as, indeed, to become almost a new work. M. Gerbe has undoubtedly taken a great deal of trouble, and the new edition is thereby much more satisfactory than the old one; but still so vast is the amount of literature relating to European ornithology that the present work is still very far from being up to the mark. Most foreign journals are ignored or quoted at second hand; and even some important independent works are passed over; while some of the original statements of Degland have been left untouched, without reference to the time which has elapsed since they first appeared *. The number of European species described is 531. It is much to be wished that a competent person would write a careful commentary upon this work. (*Cf.* Compt. Rend. lxiv. p. 169; Ibis, 1867, pp. 240–242; A. von Homeyer, J. f. O. 1868, pp. 52–57.)

Drake, C. F. Tyrwhitt. Notes on the Birds of Tangier and Eastern Morocco. Ibis, 1867, pp. 421–430.

After briefly describing the locality, 142 birds are named, short notes being added. *Otis arabs* is the most interesting of them.

* A remarkable instance of this is in vol. ii. p. 615, where an expression, "il y a une quinzaine d'années," which may or may not have been correct when Degland in 1849 published it (1st ed. ii. p. 529), still remains.

Fritsch, A. Naturgeschichte der Vögel Europa's. Prag. Folio.

This work has reached plate 43, but we have not seen any letterpress published since we last noticed it (Zool. Rec. i. p. 42). The figures of the birds represented are on so small a scale, and nearly all of species often figured before, that we think it unnecessary to refer to them in more than a few cases.

Fritsch, Karl. Kalender der Fauna von Oesterreich. Sitzungsb. K. Akad. Wissensch. Wien, Bd. lvi. (1867) pp. 201–238.

After furnishing a number of meteorological observations, the author gives (pp. 212–215) a list showing the average date of arrival in and departure from Austria of nearly 80 species of birds. (See above, p. 8.)

Gerbe, Z. Ornithologie Européenne. [See Degland, C. D., Gerbe, Z.].

Gould, John. The Birds of Great Britain. Parts xi. and xii.

Two parts of this fine work have, as usual, appeared within the past year. (*Cf.* Ibis, 1868, p. 217.)

Gray, Robert. Quadrupeds, Birds, and Fishes of Loch Lomond and its vicinity.

An appendix, apparently, to Kiddie's 'Guide Book to the Trosachs, Loch Lomond, &c.' (8vo, 1864). Only 111 species of birds included, and nothing that here requires further notice. (*Cf.* Ibis, 1867, p. 373.)

Hintz I., W. Ornithologischer Jahresbericht u. s. w. in der Umgegend von Schlosskämpen bei Cöslin in Pommern. Journ. für Orn. 1867, pp. 149– .

The author's accustomed annual report. (*Cf.* Zool. Rec. i. p. 43, ii. p. 64, iii. p. 51).

Holmgren, Aug. Emil. Handbok i Zoologi für Landtbrukare, Skogshushallare, Fiskeriidare och Jägere. II. Delen. Skandinaviens Foglar. Förra Häftet. Stockholm: 1866. pp. 434, figs.

This is a work of educational character, and seems to be very conscientiously prepared. The introductory part contains a good outline of the general structure of birds, written in a popular manner. The classification is based on that of Prof. Sundevall, and the portion of the work published extends over *Picariæ* and *Passeres*. (*Cf.* Ibis, 1868, p. 113.)

Homeyer, Alexander von. Briefe vom Kriegsschauplatze 1866. Journ. für Orn. 1867, pp. 46–55.

A good many ornithological observations made chiefly in Bohemia during the campaign of 1866; but none requiring extended notice.

——. Notizen zu Pässler's Beobachtungen aus dem Jahre 1866. *Tom. cit.* pp. 108, 109.

Of no very great importance.

Homeyer, Alexander von. Zur Wanderung über das Riesengebirge. *Tom. cit.* pp. 420–422.

Contains nothing that requires notice here.

Lloyd, L. The Game Birds and Wild Fowl of Sweden and Norway. London: 1867. Royal 8vo, pp. 599, pls. 48.

This work does not contain much original matter, but is chiefly compiled from Scandinavian authorities, and furnishes the English reader with a very fair idea of their opinions on the various subjects of which it treats. The coloured plates, many of which are copies of Körner's Illustrations to Nilsson's 'Skandinaviska Foglar,' give a good series of figures of birds, *Tetraonidæ* especially.

Loche, —. Exploration scientifique de l'Algérie pendant les années 1840, 1841, 1842 publiée par ordre du gouvernement et avec le concours d'une commission académique. Sciences physiques. Zoologie. Histoire naturelle des Oiseaux. Tome premier. Paris: 1867. Fol. pp. 309.

Though bearing the date of last year on its titlepage, it is impossible to regard this as a recent work. Its author died some six years ago, if not more; and it appears not to have received any fitting supervision since then. The volume includes notices of 166 species, one of which (belonging to *Sylviidæ*) appears to be described as new.

Malmgren, A. J. Bihang till berättelsen om den Svenska expeditionen till Spetsbergen, 1864.

An Appendix to 'Svenska Expeditioner till Spetsbergen och Jan Mayen' (Stockholm: 1867. 8vo, pp. 266), containing an abstract of the author's former papers on the Zoology of Spitsbergen (Zool. Rec. ii. p. 65; iii. p. 51), written apparently before the publication of the paper in the 'Journal für Ornithologie' for 1867 (pp. 207–211). The ornithological portion is at pp. 247–249.

Marchand, Armand. Catalogue des Oiseaux observés dans le département de l'Eure-et-Loir. Rev. et Mag. de Zool. 1867, pp. 33–37, 138, 139, 322–324.

In continuation of the series of papers noticed before (Zool. Rec. i. p. 43, ii. p. 65).

Newton, Alfred. Zur Vogel-Fauna Spitzbergens. Journ. für Orn. 1867, pp. 207–211.

A reply to the criticism of Dr. Malmgren (Zool. Rec. iii. p. 51).

Pässler, W. Einige Beobachtungen aus dem Jahre 1866. Journ. für Orn. 1867, pp. 56–64.

Remarks of no very general interest. (*Cf.* Homeyer, A. von.)

Riva, Antonio. L'Ornitologo Ticinese ossia Manuale descrit-

tivo gli Uccelli di stazione e di passaggio nel Cantone Ticino coll' elenco nominativo e sistematico di quelli d' Europa e della loro ordinaria dimora. Lugano: 1865. 8vo, pp. 596.

A compilation, chiefly adapted, as it seems, as an educational manual. The species included by the author are 539 in number, those occurring in the district to which the work has particular reference being described at some length. Many of the errors of Temminck and other older authors are perpetuated. (*Cf.* Ibis, 1868, pp. 105, 106.)

Rodd, Edward Hearle. A List of British Birds, as a Guide to the Ornithology of Cornwall, especially in the Land's-end District; with remarks on the capture, habits, &c. of some of the rarer species. London and Penzance: 1864. 8vo, pp. 42.

About 270 species have occurred in Cornwall; and specimens of the greater number are in the author's collection.

Saxby, H. L. Ornithological Notes from Shetland. Zoologist, S. S. pp. 537–539, 688–690.

Nothing of importance (except the occurrence for the first time in the islands of *Machetes pugnax*) is recorded in these papers, which are a continuation of the series before noticed (Zool. Rec. iii. p. 52).

Schacht, H. Die Sänger des Teutoburger Waldes. Zoolog. Garten, 1867, pp. 299–306.

Only common species mentioned, and some of these by names apparently of the author's invention.

Sommerfelt, Ch. List of Birds noticed in East Finmark, with a few short Remarks respecting some of them. Zoologist, Second Series, pp. 692–700, 761–778.

A translation, by Mr. H. E. Dresser, of a very interesting paper, published at Stockholm some years ago (Œfvers. K. Vet.-Ak. Förh. 1861, pp. 67–90) by the author, who resided for many years on the Varanger Fjord in north-eastern Norway. It is the best account of the ornithology of the district, which is in some respects very peculiar, as the observations extend over a far longer time than those of HH. Malm (Kröyer's Nat. Tidsskr. 2nd ser. i. pp. 180–212) and Schrader (Journ. für Orn. 1853, pp. 240–260, 305–326), and are free from some errors whereby these last were disfigured. The number of species enumerated is 140 (to most of which their Lapp names are appended), and Prof. Sundevall adds two more species in a supplementary note.

Sundevall, C. J. Svenska Foglarna. Part xix. Stockholm: 1867. Oblong 4to.

Only this one part has made its appearance. It contains half-sheets 57–60, and plates lxxii., lxxiii., lxxvii., and lxxviii.

TRISTRAM, H. B. On the Ornithology of Palestine, Part V., Ibis, 1867, pp. 73–97, pl. i.; Part VI., *tom. cit.* pp. 363–371, pl. vii.

A continuation of the articles noticed previously (Zool. Rec. ii. pp. 67, 68, iii. p. 53). Part V. contains an excellent account of the *Sylviidæ* (of which three new species are described) and especially of the genera *Saxicola* and *Ruticilla*, while Part VI. treats of the *Muscicapidæ*, *Hirundinidæ*, *Laniidæ*, *Sturnidæ*, *Emberizidæ* and some of the *Fringillidæ*. The value of oological characters in determining the different groups of *Sylviidæ* are particularly dwelt upon. The plates represent *Bessornis albigularis* and *Passer moabiticus*.

——. The Natural History of the Bible: being a Review of the Physical Geography, Geology, and Meteorology of the Holy Land; with a description of every Animal and Plant mentioned in Holy Scripture. London: 1867. 12mo, pp. 516.

A popularly written but extremely well-executed and succinct account of the subject, the ornithological portion of which occupies a large space (pp. 156–253) and is illustrated by a good many woodcuts, some of them representing species not often figured before, as *Ammoperdix heyi* (p. 227) and *Pterocles senegalensis* (p. 229). (*Cf.* Ibis, 1868, p. 219.) [See under "MAMMALIA," p. 3.]

TURNBULL, WILLIAM P. The Birds of East Lothian and a portion of the adjoining counties. Glasgow: 1867. Roy. 8vo, pp. 48, figs.

None of the 235 species included seem to require any further notice here. (*Cf.* Ibis, 1868, pp. 373, 374.)

WHITELY Junior, HENRY. Notes on Birds collected near Hakodadi in Northern Japan. Ibis, 1867, pp. 193–211, pl. iii.

The locality having been previously described by Capt. Blakiston (Ibis, 1862, pp. 312–314), the author says little of it, but enumerates 98 species, of which he collected specimens. A few corrections of synonymy are made. The plate represents *Garrulus brandti*, Hartl. (R. Z. 1845, p. 52).

WIEN, —. Ornithologische Miscellen. Journ. für Orn. 1867, pp. 82–85.

Observations chiefly of local interest.

ETHIOPIAN REGION.

ANTINORI ORAZIO. Beschreibung und Verzeichniss, u. s. w. Journ. für Orn. 1867, pp. 94–106.

A continuation of Dr. Hartmann's translation before mentioned by us (Zool. Rec. ii. p. 69, and iii. p. 53). It is still far

from being concluded. The translator's notes chiefly contain brief observations of Dr. von Heuglin's.

Barboza du Bocage, J. V. Aves das possessões portuguezas da Africa occidental que existem no Museu de Lisboa. Jornal de Sciencias da Acad. Real de Lisboa, 1867, no. ii. pp. 129-153; Segunda Lista, No. iv. pp. 324–329, est. vi.

The first of these papers contains a list of 183 species from the Portuguese possessions in West Africa, of which specimens exist in the Museum at Lisbon, with the localities whence they were obtained. Eight species, belonging to the families *Caprimulgidæ*, *Hirundinidæ*, *Laniidæ*, *Sylviidæ* (2), *Ploceidæ*, and *Columbidæ* (2), are described as new, but several have no names assigned to them. In the second paper, three species, belonging to *Picidæ*, *Sturnidæ*, and *Tetraonidæ*, are described as new, and some of those regarded in that light in the former paper are referred to previously known species. These two papers contain much that is valuable. (*Cf.* Rev. Zool. 1867, pp. 376, 377; Ibis, 1868, p. 345.)

Chambers, W. T. H. A Month in Tripoli. Ibis, 1867, pp. 97–104.

It is with some doubt that we here class this paper; but as all the species observed are Ethiopian, while one of them (*Crateropus acaciæ*) seems not to be found in Algeria, we imagine that the limits of the Palæarctic Region may not include Tripoli. The author's untimely death has frustrated his design of thoroughly investigating the little-known ornithology of this interesting district.

Finsch, Otto. Ueber ein Vogelsammlung aus Natal. Journ. für Orn. 1867, pp. 237–249.

An enumeration of 20 species collected near D'Urban, all of which, with one exception, have been before recorded from Natal; but some very valuable notes on their synonymy, especially on the African species of the genus *Merops*, are added by the author.

Grandidier, Alfred. Mammifères et Oiseaux nouveaux découverts à Madagascar et décrits. Rev. et Mag. de Zool. 1867, pp. 84–88.

Fourteen species of birds are described as new, belonging to *Falconidæ*, *Strigidæ*, *Muscicapidæ*, *Sylviidæ* (2), *Cuculidæ* (6), and *Anatidæ* (3); but in a subsequent note (*tom. cit.* pp. 254–256) the author states that eight of them have been known before; but he then adds another new bird, belonging also to *Sylviidæ*.

——. Notes sur les mammifères et les oiseaux observés à Madagascar, de 1865 à 1867. Rev. et Mag. de Zool. 1867, pp. 313–321, 353–360, 385–392, 417–420.

This series of papers contains short notes on 115 species; but it is certain that all of them have not been observed by the author. Of such as he has seen he mentions the colours of the irides and soft parts, but in few cases are any precise localities given. The series is concluded in the same journal for the present year. (*Cf.* Ibis, 1868, p. 223.)

Hartlaub, G. Report on a Collection of Birds found in the Island of Zanzibar by Dr. John Kirk. Proc. Zool. Soc. 1867, pp. 823–828.

Forty-two species are enumerated, of which two (belonging to *Turdidæ* and *Tetraonidæ*) are new. There are only three exclusively eastern, six are essentially South-African, two of which extend up the western coast to Angola. Most of the remainder have a wider distribution.

Heuglin, M. Th. von. Berichtungen und Noten zu Antinori's Katalog der nordost-afrikanischen Vögel. Journ. für Orn. 1867, pp. 198–207.

A good many corrections and notes on the Marquess O. Antinori's list (Zool. Rec. i. p. 48), the most important of which are noticed under the names of the species to which they refer. The number obtained by the Marquess is reduced, according to the author, from 254 to 251.

——. Die Brutcolonien des Archipels von Dahlak. Journ. für Orn. 1867, pp. 281–287.

An extract from the author's 'Reise nach Abessinien'—a work published in 1868. The Dhalak Islands are in the Red Sea, off Ansley-Bay. The species observed breeding were *Dromas ardeola, Platalea leucorodia, Ardea schistacea, A. brevipes, Larus hemprichi, Sterna albigena, Phaeton æthereus*, and a few others.

——. Ueber die ornithologischen Arbeiten des Herzogs Paul Wilhelm von Würtemberg, während seiner Reise in die oberen Nil-Länder. Journ. für Orn. 1867, pp. 289–304.

Very useful remarks on the birds figured in the Duke Paul of Würtemberg's unpublished 'Icones,' of which a list appeared some years ago in the 'Naumannia' (1857, pp. 432–434). Descriptions of most of the good species are now for the first time published, and some of the other specimens in the Duke's collection at Mergentheim are identified.

——. Synopsis der Vögel Nord-Ost-Afrikas, des Nilquellengebietes und der Küstenländer des rothen Meeres. Journ. für Orn. 1867, pp. 361–398.

This is the beginning of a series of papers (continued in the same journal for the present year) which are to embody the ornithological results of the author's protracted wanderings in North-eastern Africa; and if the design be fully carried out, it will be of very great service; for his writings are so nume-

rous, and have so often been penned without his having the opportunity of consulting museums or books that a thorough revision of them is required. It follows of course that a very large number of species described by the author are now, and will be, identified with those described by other ornithologists. The present paper contains part of the *Fringillidæ* and *Ploceidæ*.

Layard, Edgar Leopold. The Birds of South Africa. A descriptive Catalogue of all the known Species occurring South of the 28th Parallel of South Latitude. Cape Town and London: 1867. 8vo, pp. 382.

The first work published professing to give a complete account of the ornithology of South Africa must needs be an important one. On the other hand, so scattered are the materials from which alone it is possible to compile such a work that it must needs have many defects. Some of these defects in the work before us are patent on the most cursory inspection of it, and they may not unnaturally lower its value in the eyes of experts. But the naturalist who can appreciate at their proper rate even somewhat serious errors of typography and a general amount of irregularity in the arrangement of details, will find much instruction in Mr. Layard's work, and feel thankful to its author. The design of the book is excellent; and if its execution somewhat fails, a practical naturalist will be disposed to make every allowance for the difficulties thereto belonging. Theoretically each species of the 702 hitherto recorded as having been found within the limits laid down by the author is diagnostically described, after a short and, we must add, often an imperfect, list of synonyms. Then follows a succinct account of its habits, generally from the observation of the author or one of his numerous friends, or, where such information was not available, from already published sources. Where the former obtains, the result is most satisfactory. The arrangement, and in great measure the nomenclature, of Mr. G. R. Gray's 'Genera of Birds' is followed; and the volume is supplied with a sufficiently good index. The chief faults of the work, in our opinion, are the number of species included in it for the occurrence of which in the colony there is little if any good show of reason. Next to this is a scantiness of reference to original authorities, and (as confessed by the author in his preface) an unconnectedness, or, we would say, a want of uniformity, in the treatment of the different species. But with all these drawbacks, the work is one of great utility, and evinces a great amount of labour bestowed on its production. In future every student of South-African ornithology will have to refer to it; and its effects on the pursuit of the science at the Cape will doubtless be as important as those produced in their respective spheres by Dr. Jerdon's 'Birds of India' and Mr. Gould's 'Handbook to the Birds of Australia.' One species, belonging to *Motacil-*

lidæ, is described as new. (*Cf.* Ibis, 1868, pp. 101, 102, 135–164, 242–248, 253–271; Ann. & Mag. N. H. 4th ser. i. pp. 383–385.)

Layard, Edgar Leopold. Letter on the ornithology of St. Helena. Ibis, 1867, pp. 248–252.

The "Wire-bird" is *Ægialites pecuarius* (Temm.).

——. Letter on the ornithology of the Crozette Islands. Ibis, 1867, pp. 457–460.

Newton, Edward. Descriptions of some New Birds from the Seychelles Islands. Proc. Zool. Soc. 1867, pp. 344–347, pl. xxii. Erratum, *tom. cit.* p. 821.

Prior to the author's visit to these islands only *five* species of land-birds were known to occur there. These were all peculiar to the group. He now describes *seven* new species, belonging to *Psittacidæ* (2), *Meliphagidæ* (2), *Muscicapidæ*, *Turdidæ*, and *Ploceidæ*.

——. On the Land-Birds of the Seychelles Archipelago. Ibis, 1867, pp. 335–360, pl. iv.

After a short description of the different islands of the group, where the author stayed a month, the different species previously known to live there are recited, and then follows an account of his proceedings there, the characters of the new birds being added from the paper just mentioned. All the 14 indigenous land-birds, except two (which have not been positively identified), are peculiar. A list of the birds observed in the archipelago, and a table of the distribution of the peculiar species in the several islands, with some remarks showing the Malagash tendency of the Seychelles *ornis*, conclude this interesting paper.

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 i., ii. Leyde: 1867. Roy. 8vo, pls.

This very beautiful work loses scarcely any interest by the fact that the most important discoveries of the travellers above named have already been made public (Zool. Rec. ii. pp. 71, 72, iii. p. 54). Some previous determinations of species are now retracted; but further improvements in this respect seem desirable. There is also some inconvenience caused by the authors each recounting his observations in the first person, leaving it to be gathered from the context which of them is actually giving his opinion. (*Cf.* Ibis, 1868, pp. 224–226.)

Taylor, E. Cavendish. Egypt Revisited. Ibis, 1867, pp. 48–73.

The results of the author's former visit (in 1853) were published in the first volume of the same journal (Ibis, 1859, pp. 41–55). The present is a list of the birds obtained or fully identified by him during both visits; but the remarks, unless the

contrary is stated, refer only to the latter, when he went up the Nile in the winter of 1863–64 as far as the First Cataract, and observed 168 species, a few of some rarity. The notes on the species of *Saxicola* are especially worthy of attention.

Tristram, H. B. On new Species of Birds from South Africa. Proc. Zool. Soc. 1867, pp. 886–888. (*Cypselidæ* and *Sylviidæ*).

INDIAN REGION.

Adams, A. L. Wanderings of a Naturalist in India, the Western Himalayas, and Cashmere. Edinburgh: 1867. 8vo, pp. 333.

This work contains very numerous notes on the birds of the countries named, is agreeably written, and has a good index. Most of the scientific observations, however, have been previously placed on record by the author (P. Z. S. 1858, pp. 466–512). Sir W. Jardine has corrected the nomenclature. (*Cf.* Ibis, 1868, pp. 219, 220.)

Beavan, R. C. The Avifauna of the Andaman Islands. Ibis, 1867, pp. 314–334.

The exertions of Col. Tytler have added much to the knowledge of the birds of this group; and many of his notes are given in this paper, which includes 94 species, of which 14 (belonging to *Strigidæ, Psittacidæ, Cuculidæ, Cypselidæ, Hirundinidæ, Oriolidæ, Edoliidæ, Dicruridæ, Muscicapidæ, Turdidæ, Sturnidæ, Ardeidæ,* and *Anatidæ*) are described as new; 22 are peculiar to the islands, so far as known; 6 are of uncertain determination; and 5 have been introduced. (*Cf.* Ibis, 1867, p. 466; and 1868, pp. 131, 132.)

——. Notes on various Indian Birds. Ibis, 1867, pp. 430–455, pl. x.

In continuation of the paper in the same journal for 1865 (Zool. Rec. ii. p. 72). No new species are described, but many valuable details are given respecting some 80 species, particularly intended to supply information not furnished in Dr. Jerdon's work. *Piprisoma agile*, with its young, nest, and egg, forms the subject of the plate.

Blanford, W. T. Letter on the Ornithology of Nagpoor, Chanda, and Siroucha. Ibis, 1867, pp. 461–464.

Several species of great rarity met with, among them *Salpornis spilonota* (Frankl.).

——. On a new species of *Callene* from the Pulney Hills, in Southern India. Proc. Zool. Soc. 1867, pp. 832–834, pl. xxxix. (See *Sylviidæ*.)

Blyth, Edward. The Ornithology of India.—A Commentary on *Dr. Jerdon's* 'Birds of India.' Ibis, 1867, pp. 1–48, 147–185.

These two papers, in continuation of the series noticed last year (Zool. Rec. iii. pp. 55, 56), treat respectively of the species contained in the two parts of Dr. Jerdon's second volume (or in the second and third volumes of his work if that computation be adopted). They are exactly of the same character as their predecessors; and students of Indian ornithology must make themselves acquainted with their contents if they wish to advance in the knowledge of their subject. In our 'Record' last year we erroneously stated that no species appeared to be described as absolutely new, overlooking three (belonging to *Strigidæ*, *Cuculidæ*, and *Campephagidæ*) which were so. These are included in our present 'Record,' as well as notices of eleven others (belonging to *Cypselidæ*, *Timaliidæ*, *Dicruridæ*, *Muscicapidæ*, *Turdidæ*, *Fringillidæ*, and *Corvidæ*), described by the author in 1865 (Zool. Rec. ii. pp. 72, 73), which we before omitted to mention. In the first paper of the two at present under notice, seven new species are described (belonging to *Sylviidæ*, *Alaudidæ*, and *Corvidæ*). In the second, two new species only seem to be described; these belong to *Alaudidæ*. It would be a hopeless attempt to give an idea of the many corrections of synonymy, and other valuable information, contained in this series of papers. In a further list of "Addenda" (pp. 312–314) another new species (*Strigidæ*) is described, and a new genus (*Tetraonidæ*) named.

——. The Ornithology of Ceylon.—A Supplement to *Dr. Jerdon's* 'Birds of India.' Ibis, 1867, pp. 294–314.

This paper contains an enumeration of the Cinghalese species which are not admitted to Dr. Jerdon's work, and thereby supplies a want much felt. They are 41 in number, of which 37 have not been observed out of the island; but 10 of them are especially akin to as many Indian forms, and may be regarded as local specializations. The only peculiar generic form is *Phœnicophæus*, as distinguished from *Xanclostomus*. One or two cases of abnormal distribution are noticed; but it is possible that these may become less extraordinary when more is known of the *ornis* of Ceylon and of Southern India respectively. This paper is exactly in the same style as those on the ornithology of India; and to make a proper abstract of it is out of the question. Two species (belonging to *Psittacidæ* and *Ploceidæ*) receive new names. Some further "Addenda" to the 'Ornithology of India' are appended to this paper. (*Cf.* Ibis, 1867, pp. 467, 468.)

Frauenfeld, Georg von. Beiträge zur Fauna der Nikobaren. Verhandl. k. k. zoolog.-botan. Gesellsch. Wien, 1867, pp. 591–598.

After briefly noticing the works of other writers on this group

of islands, where the author, in 1858, stayed some ten days, he gives a list of 34 species found by him in the most southern part of Kamorta, adding a few notes on some of them.

Gould, John. The Birds of Asia. Part xix. London: 1867. Imp. folio.

The customary annual part duly made its appearance. Little more than half the species included are really "Indian." The plates show an increased amount of care. (*Cf.* Ibis, 1868, p. 217.)

Hume, Allan. Extract from a Letter on Indian Ornithology. Ibis, 1867, pp. 471, 472.

Swinhoe, R. Jottings on Birds from my Amoy Journal. Ibis, 1867, pp. 226–237, 385–413.

These continue the valuable observations of the preeminently Chinese ornithologist, and contain a vast number of notes on various species. In the first paper, one species only (*Tantalidæ*) is described as new, but in the second no less than seven (*Timaliidæ, Laniidæ, Emberizidæ, Scolopacidæ, Charadriidæ, Procellariidæ,* and *Pelecanidæ*). Exception to some of these, however, has since been taken.

Verreaux, Jules. Catalogue d'Oiseaux récoltés par Mgr. Perny, évêque du Su-tchuen, dans le nord de la Chine, et descriptions de deux espèces nouvelles. Rev. et Mag. de Zool. 1867, pp. 169–174, pls. xv., xvi.

Fifty-two species are enumerated, some of which are of considerable rarity; the new ones belong to *Nectariniidæ* and *Picidæ*; but the latter is described subsequently (pp. 271, 272).

AUSTRALIAN REGION.

Buller, Walter. Versuch über die Ornithologie Neu-Seelands. Journ. für Orn. 1867, pp. 305–347.

A translation, by Herr O. Finsch, of the essay noticed last year (Zool. Rec. iii. p. 57), with some valuable notes by the translator (*vide infrà*).

Diggles, Sylvester. The Ornithology of Australia. Queensland. Imp. 4to. Parts XI.–XV., pls.

Five more parts of this work (*cf.* Zool. Rec. iii. pp. 57, 58) have reached England. The most important species noticed and figured is the *Casuarius* of Australia.

Finsch, Otto. Walter Buller's 'Versuch über die Ornithologie Neu-Seelands,' übersetzt und mit kritischen Anmerkungen versehen. Journ. für Orn. 1867, pp. 305–347.

Mr. Buller's treatise was noticed by us last year (Zool. Rec. iii. p. 57). The translator's introduction and notes are very valuable. "*Mimus carunculatus,* Bull." (Zool. Rec. iii. p. 95)

is referred to the genus *Anthochæra*, and called *A. bulleri*. The number of New-Zealand birds is raised to 144, including two of the three described recently by Herr von Pelzeln (*vide infrà*).

Finsch, Otto, und Hartlaub, G. Beitrag zur Fauna Centralpolynesiens. Ornithologie der Viti-, Samoa- und Tonga-Inseln. Halle: 1867. Roy. 8vo, pp. 290, pls. 14.

This is one of the most interesting and valuable works of the past year, and, besides being an important contribution to the knowledge of geographical ornithology, it adds largely to our acquaintance with the fauna of Polynesia. The materials for it are chiefly furnished by the collections of Dr. E. Gräffe in the Feejee and Navigator's Islands, including in the second the distant outlier of Uea or Wallis's Island. But the birds of the Friendly Islands are also included, though they are but little known since the days of Cook. The introduction contains a careful historical notice of the various authorities on the subject, and is concluded by an excellent table showing the geographical extension of the 172 species of Polynesia, of which it would appear that about 100 are found within the author's limits, 59 being met with in the Feejees, 48 in the Navigator's, and 31 in the Friendly group, while 18 seem to be peculiar to the first, 14 to the second, and 4 to the third. Species to the number of 37 are common to Australia, among which occur many well-marked Australian forms; while, on the other hand, many of those that are absolutely wanting in Australia are also wanting here.

Each species is very carefully described in the body of the work, with an elaborate list of authorities for its occurrence either within the limits mentioned or without them; and much useful information is also added, especially with regard to rectification of nomenclature. Seven new species appear to be described, belonging to the families *Alcedinidæ* (2), *Meliphagidæ*, *Fringillidæ*, *Sturnidæ*, *Rallidæ*, and *Procellariidæ*; a good many, or their eggs, are also figured. [See "Oology."] (*Cf.* Ibis, 1867, pp. 245, 246; 1868, pp. 107–109.)

Frauenfeld, Georg von. Zur Flora und Fauna von Neucaledonien. Verhandl. k. k. zool.-bot. Gesellsch. 1867, pp. 464–493.

This paper contains (pp. 59–61) a nominal list of the birds of New Caledonia, 81 in number; but no notes on them are added, except the suggestion that several of them are easily domesticated, among them *Rhinochetus jubatus*.

Gould, John. The Birds of Australia. Supplement—Part iv. London: 1867. Imp. folio.

The preceding part of this 'Supplement' was published in 1859. Seventeen species are now figured in the author's usual

admirable style. Of these, one (belonging to *Columbidæ*) is described also as being new. (*Cf.* Ibis, 1868, pp. 217, 218.)

Gould, John. Description of a New Australian Bird pertaining to the genus *Malurus*. Proc. Zool. Soc. 1867, pp. 302, 303.

——. On two new Birds from Eastern Australia. Ann. & Mag. Nat. Hist. 3rd. ser. xx. pp. 269, 270. (See *Cuculidæ* and *Meliphagidæ*.)

Haast, Julius. Report on the Headwaters of the River Rakaia. Christchurch [New Zealand] : 1866. Sm. fol. pp. 73.

Contains some interesting notes on the ornithology of the Alpine Regions of New Zealand, about which there is probably much more to be learned.

Hartlaub, G. On a Collection of Birds from some less-known Localities in the Western Pacific. Proc. Zool. Soc. 1867, pp. 828–832.

The collection was made at the Pelew, Matelotas, and Mackenzie Islands, with the Bougainville group near New Guinea. It contains 23 species, 4 of which (belonging to *Muscicapidæ* and 2 to *Megapodiidæ*) are probably new.

——. (See Finsch, O.)

Kaup, J. J. On the *Nisi* and *Astures* of the Indian Archipelago and of New Holland. (See Accipitres.)

Krefft, Gerard. Notes on the Mammals and Birds of Cape York, &c. Proc. Zool. Soc. 1867, pp. 316–319.

The only ornithological facts relate to species of *Pitta*.

M'Coy, Frederick. On two new Species of Birds found in Victoria. Ann. & Mag. Nat. Hist. 3rd ser. xix. pp. 184, 185. (See *Ampelidæ* and *Maluridæ*.)

——. On the Recent Zoology and Palæontology of Victoria. *Op. cit.* xx. pp. 175–202.

This is a notice drawn up for the Intercolonial Exhibition at Melbourne. The ornithological part is limited to pages 177–181, and consists of a nominal list of the species (over 300 in number) occurring in Victoria, to which are prefixed a few words on five of the rarest.

——. On a new species of Victorian Honey-eater. *Tom. cit.* p. 442. (See *Meliphagidæ*.)

Pelzeln, August von. Ueber eine von Herrn Julius Haast erhaltene Sendung von Vogelbälgen aus Neu-Seeland. Verhandl. k. k. zool.-bot. Gesellsch. Wien, 1867, pp. 315–318.

The collection contained 20 species, of which two (belonging to *Meliphagidæ* and *Certhiidæ*) are new; but no precise localities are given for any of the specimens. The author takes the op-

portunity of describing a third new species from New Zealand (*Corvidæ*). (*Cf.* Ibis, 1868, p. 227.)

Rosenberg, H. von. Een woord over den Grooten Paradijsvogel (*Paradisea apoda*), gevolgd door eene korte beschrijving van eenige nieuwe, gedurende mijnen reistogt naar de Aroe- en Kei-Eilanden, ontdekte Vogelsoorten. Natuurk. Tijdschr. voor Nederl. Indië, xxix. (1866) pp. 136–145.

The supposed new species are seven in number, but all have been shown by Prof. Schlegel to have been already described. (Zool. Rec. iii. pp. 103–109.)

NEARCTIC REGION.

Baird, S. F. The Distribution and Migrations of North American Birds. Ibis, 1867, pp. 257–293.

A reprint in full of the able article we noticed last year. (Zool. Rec. iii. pp. 59, 60.)

Brewer, T. M. Some Errors regarding the Habits of our Birds. American Naturalist, 1867, pp. 113–123.

The erroneous statements corrected chiefly have to do with nidification or oology, and are from the works of Wilson, Audubon, Nuttall, and the author himself.

Elliot, D. G. The Birds of North America. Parts III.–VIII. New York: 1867. Imp. fol.

Six parts, each containing five plates, of this great work made their appearance in the course of the year. The species figured will be found named under the notice of the families to which they belong. (*Cf.* Ibis, 1867, p. 376, and 1868, p. 345.)

Lawrence, George N. Descriptions of New Species of American Birds. Ann. Lyc. N. H. New York, 1867, pp. 466–482. [See "Neotropical Region."]

M'Ilwraith, T. List of Birds observed near Hamilton, Canada West. Proc. Essex Inst. vol. v. pp. 79–96.

The author's observations extend over a period of ten years; 241 species are included by him as having been found in the locality.

Samuels, Edward A. Ornithology and Oölogy of New England, &c. Boston: 1867. 8vo, pp. 583, pls.

A popular work, of which the scientific portion is chiefly taken from Prof. Baird's well-known 'Birds of North America,' and the accounts of the habits and so forth of the species compiled mainly from Wilson, Audubon, Nuttall, and other writers; but some original and hitherto unpublished notes on the birds of Lower Canada, by Mr. William Couper, are also inserted. The illustrations are extremely moderate, and, none of them being either novel or sufficiently characteristic to be of much use to

the inquirer, we do not think it necessary to give a list of the species figured. [See "Oology."] [*Cf.* American Naturalist, 1867, pp. 318–320.]

NEOTROPICAL REGION.

Bryant, Henry. Additions to a List of Birds seen at the Bahamas. Proc. Boston Soc. Nat. Hist. xi. (1866) pp. 63–70.

The author visited the islands in 1859, and soon after published a list of the birds he saw there (Proc. Boston Soc. N. H. vii. p. 102). Wishing to know more about them he returned thither in 1865–66; and this paper contains his observations on the 31 species he there met with, which either he did not see during his first visit or else present some new feature worthy of notice. Only one (belonging to *Mniotiltidæ*) is described as new, but of two others (*Tyrannidæ* and *Turdidæ*) varieties are noticed. (*Cf.* Ibis, 1868, pp. 229, 230.)

——. A List of the Birds of St. Domingo, with Descriptions of some New Species or Varieties. Proc. Boston Soc. Nat. Hist. xi. (1866) pp. 89–98.

This list is founded on three collections—that of M. Sallé (P. Z. S. 1857, p. 230), made in the eastern or Dominican end of the island, and two others from the western or Haytian, which have not before been catalogued. In all, 79 species are included, of which one is new (*Fringillidæ*), and varieties of others (*Hirundinidæ*, *Tyrannidæ*, and *Turdidæ*) to the number of four are described.

Euler, Carl. Beiträge zur Naturgeschichte der Vögel Brasiliens. Journ. für Orn. 1867, pp. 177–198, 217–233, 399–420.

A very valuable and interesting series of papers. After describing at some length the physical features of the district of Cantagallo, situated between the northern slopes of the Serra de Nova Friburgo and the river Parahyba, in which his observations were made, the author proceeds to give an account of the times and habits of breeding of the birds inhabiting it, to the number of about 400 species, of which he has obtained about 250 at Cantagallo. The nomenclature employed is that of the late Prince Maximilian of Wied. To the first article three tables are appended, adding much to the facility of reference. These show (1) the times at which the different species lay their eggs, in chronological order, (2) the same arranged according to the species, and (3) the maximum number of eggs of each. The two remaining papers contain various careful observations on the nests and eggs of the birds noticed.

Landbeck, L. Contribuciones a la Ornitolojía de Chile. Anales

de la Universidad de Chile, tom. xxiv. no. 4. (April 1864), pp. 336–348.

A Spanish version of the first paper by the author and Dr. Philippi in the 'Archiv für Naturgeschichte' (Zool. Rec. ii. p. 81), and of the paper in the same periodical by the author alone (Zool. Rec. ii. p. 80).

Lawrence, George N. Descriptions of New Species of American Birds. Ann. Lyc. N. H. New York, 1867, pp. 466–482.

We place our remarks on this paper here, because a bare majority of the *nineteen* species described belong to the Neotropical Region (see *Trochilidæ*, *Formicariidæ*, *Dendrocolaptidæ*, *Cotingidæ*, *Tyrannidæ*, *Tanagridæ*, *Fringillidæ*, *Tetraonidæ*); but the rest would appear to come into the Nearctic avifauna. Some of the species are asserted to be not new (Ibis, 1868, pp. 114, 115).

——. Notes on certain Birds from New Granada, with descriptions of New Species. Proc. Acad. Nat. Sci. Philad. 1867, pp. 94, 95.

These refer to three species only, two of *Tanagridæ* and one of *Columbidæ*. (*Cf.* Ibis, 1868, p. 230.)

——. Descriptions of Five New Species of Central American Birds. Proc. Acad. Nat. Sc. Philadelphia, 1867, pp. 232–234.

They belong to *Trochilidæ* (3), *Cuculidæ*, and *Rallidæ*.

Salvin, Osbert. On some Collections of Birds from Veragua. Proc. Zool. Soc. 1867, pp. 129–161, pl. xiv.

After giving a very complete summary of what had been previously known of the ornithology of the district (which is compounded of that of the neighbouring districts of Panama and Costa Rica, with the addition of some few peculiar forms), the author proceeds to enumerate 220 species sent thence by one of his collectors (*cf.* Zool. Rec. iii. p. 64). Of these, 23 had not previously been noticed as belonging to Central America; and some valuable observations on the physical geography of the district are added. Two new species are described, belonging to *Cracidæ* and *Tetraonidæ*, and *Buarremon crassirostris* is figured.

Sclater, P. L. Notes on the Birds of Chili. *Tom. cit.* pp. 319–340.

After a summary of the literature of the subject subsequent to Dr. Hartlaub's paper (Naumannia, 1853, pp. 207–222), the author treats very concisely the different families of birds known to occur in Chili, with especial reference to the species recently described by Messrs. Philippi and Landbeck (Zool. Rec. ii. pp. 80, 81, iii. p. 64), with types of which they have supplied him. Mr. Sclater is therefore able to speak with authority re-

specting them. He concludes with a nominal list of Chilian birds, 209 in number.

Sclater, P. L. On the Birds of the vicinity of Lima, Peru. With Notes on their Habits, by Professor W. Nation. Part II. *Tom. cit.* pp. 340–344, pls. xx. xxi.

A continuation of the paper noticed last year (Zool. Rec. iii. p. 64). Twelve species are mentioned, of which two (belonging to *Fringillidæ* and *Rallidæ*) are named as new.

——. Remarks on *Dr. Léotaud's* 'Birds of Trinidad.' Ibis, 1867, pp. 104–108.

Léotaud's book (Zool. Rec. iii. pp. 63, 64) contains very few serious faults; but he is wrong in supposing that Trinidad has anything in common with the other West-India Islands; and the species which are common to the first and to North America probably find their way thither by Venezuela. Notes on some dozen species follow; but by these we benefited in our 'Record' last year, and the substance of them will be found incorporated with our extracts from Léotaud's work.

Sclater, P. L., and Salvin, Osbert. List of Birds collected on the Blewfields River, Mosquito Coast, by Mr. Henry Wickham. Proc. Zool. Soc. 1867, pp. 278–280.

No collections from this district had hitherto been examined by the authors. The nearest point of the ornithology of which any account has been published is Greytown (*cf.* Zool. Rec. ii. p. 81). Mr. Wickham's collection contains 39 species, of which none are new, but the district being one of interest (for it is somewhere here that the fauna of Guatemala passes into that of Costa Rica) a complete list of it is given. Some seven species in it have not before been recorded from a locality so far north.

——, ——. List of Birds collected by Mr. Wallace on the Lower Amazons and Rio Negro. *Tom. cit.* pp. 566–596, pls. xxix., xxx.

This very praiseworthy paper is a successful attempt to set forth the *ornis* of the districts to which it refers, and is as complete as it could possibly be made, considering that the bulk of Mr. Wallace's collections perished by fire on their way home, while some other portions have been dispersed without being catalogued. After naming the chief localities at which the specimens were obtained, the authors give a careful list of the 282 species (3 of which, belonging to *Vireonidæ* (2) and *Cotingidæ*, are new) to which they are referred; and then follow some highly interesting generalizations on the avifauna of the country, the results of which fully agree with the conclusions drawn by Mr. Bates from a consideration of the Diurnal Lepidoptera of the Amazon-valley (Trans. Entom. Soc. n. s. xv. pp. 223–335), and may be

briefly stated thus :—(1) The Para district belongs to the same zoological province as the Guianas, and has received its birds mainly thence. (2) In certain cases (17 per cent. of the whole number, excluding species of general distribution) variation has arisen, resulting in the production of new specific forms of greater or less distinctness. (3) In some of these cases the Amazons has operated as a barrier, isolating the derived forms from their Guianan allies, thereby leading to accumulated variations, ultimately resulting in the specific differences now observable.

Sclater, P. L., and Salvin, Osbert. Catalogue of Birds collected by Mr. E. Bartlett on the River Huallega, Eastern Peru, with Notes and Descriptions of New Species. *Tom. cit.* pp. 748–759, pl. xxxiv.

The collection contained nearly 1000 specimens, belonging to 205 species, and was chiefly made at Yurimaguas, Xeberos, and Chyavetas, on or near the river named. Several species are not precisely determined; but only five, belonging to the families *Picidæ, Cypselidæ, Dendrocolaptidæ,* and *Formicariidæ* (2), are characterized as previously undescribed, which is probably owing to the fact that Mr. Hauxwell collected largely in the same district.

——, ——. List of Birds collected at Pebas, Upper Amazons, by Mr. John Hauxwell, with Notes and Descriptions of New Species. *Tom. cit.* pp. 977–981, pl. xlv.

The list contains 135 species, of which notes are added respecting seven, four of them (belonging to *Formicariidæ, Tyrannidæ, Fringillidæ,* and *Rallidæ*) being described as new.

——, ——. On Peruvian Birds collected by Mr. Whitely. Part I. *Tom. cit.* pp. 982–991, pl. xlvi.

This contains an account of the birds obtained by the collector in his expedition to South-western Peru, and includes 58 species, none of which appear to be new, though several rectifications of synonymy are made.

ANATOMY AND PHYSIOLOGY.

Coues, Elliott. On the Osteology and Myology of *Colymbus torquatus*. Mem. Boston Soc. Nat. Hist. i. pp. 131–172, pl. v.

A very good monograph, most plainly written. (*Cf.* Ibis, 1868, p. 229.)

Eyton, T. C. Osteologia Avium; or, a sketch of the Osteology of Birds. Wellington, Salop: 1867. 4to, pp. 229, pls.

The publication of this work was commenced in 1858 (Ibis, 1859, p. 101); and the fourteen successive parts have since ap-

peared at intervals so irregular that it is impossible for us to say precisely how much of the whole belongs to the period to which this 'Record' properly refers. However, the volume was completed last year, and a very valuable one it is, besides being quite unique of its kind. It contains a series of plates, by Mr. Erxleben, over 110 in number, with figures of skeletons, or parts of skeletons, of birds, and so well selected from the author's rich and well-authenticated collection, that nearly all the principal forms of bird-structure are represented; but it is a drawback that the plates are numbered or lettered in such a manner as to render reference to them awkward. The letterpress consists of short descriptions of the osteology of upwards of 450 species, systematically arranged, interspersed with general remarks at the end of each order. Mr. Eyton's classification is founded almost entirely on osteological characters. He divides birds into thirteen orders, as follows :—

I. Raptores—(1) *Vulturidæ*, (2) *Falconidæ*, (3) *Strigidæ*; II. Volitores—(1) *Trochilidæ*, (2) *Cypselidæ*; III. Omnivores—(1) *Caprimulgidæ*, (2) *Trogonidæ*, (3) *Alcedinidæ*, (4) *Buceridæ* [qu. *Bucerotidæ*?]; IV. Prehensores—(1) *Psittacidæ*, (2) *Rhamphastidæ*; V. Scansores—(1) *Picidæ*; VI. Erucivores—(1) *Cuculidæ*, (2) *Musophagidæ*; VII. Insessores—(1) *Menuridæ*, (2) *Certhiidæ*, (3) *Meliphagidæ*, (4) *Paridæ*, (5) *Alaudidæ*, (6) *Motacillidæ*, (7) *Sylviidæ*, (8) *Muscicapidæ*, (9) *Ampelidæ*, (10) *Laniidæ*, (11) *Turdidæ*, (12) *Oriolidæ*, (13) *Sturnidæ*, (14) *Fringillidæ*, (15) *Tanagridæ*, (16) *Corvidæ*; VIII. Bipositores—(1) *Columbidæ*, (2) *Dididæ*; IX. Rasores—(1) *Tetraonidæ*, (2) *Phasianidæ*; X. Cursores—(1) *Struthionidæ*; XI. Littores—(1) *Otidæ* [qu. *Otididæ*?], (2) *Charadriidæ*, (3) *Scolopacidæ*, (4) *Tringidæ*; XII. Grallatores—(1) *Ardeidæ*, (2) *Rallidæ*; XIII. Natatores—(1) *Anatidæ*, (2) *Colymbidæ*, (3) *Alcidæ*, (4) *Pelecanidæ*, (5) *Laridæ*. (*Cf.* Ibis, 1868, pp. 98, 99; Journ. Anat. & Physiol. ii. p. 391.)

Hasse, C. Der Bogenapparat der Vögel. Zeitschr. für wissenschaftl. Zoologie, 1867, pp. 598–345, Taf. xxxvii., xxxviii. Nachtrag, *tom. cit.* pp. 646–654.

A very elaborate dissertation on the auditory apparatus of birds.

Huxley, Thomas H. On the Classification of Birds; and on the Taxonomic Value of the Modifications of certain of the Cranial Bones observable in that Class. Proc. Zool. Soc. 1867, pp. 415–472.

[See under "General Subject."]

Milne-Edwards, A. Recherches Anatomiques et Paléontologiques pour servir à l'histoire des Oiseaux Fossiles de la France. Livr. 1–17. Paris: 1867. 4to, pls.

[See under "General Subject."]

——. Note Additionnelle sur l'appareil respiratoire de quelques Oiseaux. Ann. des Sc. Nat. 5ᵉ sér. Zool. vii. pp. 12–14.

Since the publication of his former paper on this subject (Zool. Rec. ii. p. 86), the author has had occasion to find that the diffused condition of the respiratory apparatus is less rare than he had supposed, and adduces examples dissected by him of *Argala dubia* and *Buceros bicornis* in support of his view.

Murie, James. On *Cygnus buccinator*, Richardson, and *C. passmorii*, Hincks. Proc. Zool. Soc. 1867, pp. 8–13.

A careful comparison of the differences observable in parts of the osteology of some specimens of American Swans, leading to the conclusion that *C. passmorii* is not specifically distinct from *C. buccinator*. The sterna of both are figured.

——. On the tracheal Pouch of the Emu (*Dromæus novæ-hollandiæ*, Vieill.). *Tom. cit.* pp. 405–415.

The bibliography of this remarkable structure is first given, and then a very minute description of it, illustrated by figures. Its function, the author is inclined to suppose, may be that of a sexual organ of sound during the breeding-season. It is considered to be homologous with the tracheal sac of the Chamæleon, and in this light to be another proof of the Reptilian affinities of the *Struthiones*.

——. On the dermal and visceral structure of *Rhinochetus*, *Eurypyga*, and *Cancroma*. *Tom. cit.* p. 475.

To be published hereafter in the Society's 'Transactions.'

Owen, R. On *Dinornis* (Part IX.) : containing a description of the Skull, Atlas, and Scapulo-coracoid Bone of the *D. robustus*, Owen. Trans. Zool. Soc. v. pp. 337–358, pls. liii.–lvi.

A continuation of the author's well-known series of valuable memoirs on this group of birds. The head is very minutely described. The scapula and coracoid are confluent, as in *Apteryx*, but the latter is relatively much broader. There is no trace of a glenoid cavity for the articulation of a wing, but in its place a rough ridge to which any rudiment of a humerus, if such existed, must have been attached; Prof. Owen, however, thinks that fore limbs were entirely wanting in this bird.

——. On *Dinornis* (Part X.) : containing a description of part of the Skeleton of a flightless Bird indicative of a New Genus and Species (*Cnemiornis calcitrans*, Ow.). Trans. Zool. Soc. v. pp. 395–404, pls. lxiii.–lxvii.

This form (Zool. Rec. ii. p. 138) was remarkable for the extraordinary development of the epicnemial, procnemial, and ectocnemial processes of the tibia. It also differed from *Dinornis* by possessing wings, though they were too short to admit of flight. The remains described and figured consist of cervical and dorsal vertebræ, pelvis, portions of the sternum, humerus, femur, tibia, fibula, and metatarsus. The femur of *Aptornis* and metatarsus of *Dinornis geranoides* are also figured.

SCHMIDT, MAX. Das Skelet der Hausvögel in geometrischen Zeichnungen auf 15 lithographirten Tafeln dargestellt und mit erläuterndem Texte versehen. Frankfurt: 1867. Large fol.

This work we have not seen. It is highly spoken of by Prof. Pagenstecher (*Zoolog. Garten*, 1867, pp. 358, 359).

TURNER, W. Remarks on the assumption of Male Plumage by the Hen of the Domestic Fowl. Proc. Roy. Physical Soc. Edinburgh, iii. pp. 297–299.

A confirmation of much that has been previously advanced on the subject.

PTERYLOLOGY.

NITZSCH [C. L.] Pterylography, translated [by W. S. DALLAS] from the German. London: 1867. Edited by P. L. SCLATER. Fol. pp. 181, pls. x. (Ray Society.)

The Ray Society could not have done better than select as their first ornithological publication the work of Nitzsch, which, though the foundation of all subsequent investigations on the subject, has hitherto met with undeserved neglect. The Society also has been most fortunate in finding an editor and translator fully equal to their respective tasks, as well as obtaining the original excellent copper-plates by which the book is illustrated.

The original work was edited by Prof. Burmeister after the author's death, and appeared in 1840 (Halle, 4to), the prefatory portion only having been published during his lifetime in 1833. To most ornithologists its contents, nay even the subject of which it treats is comparatively unknown. We may therefore be excused for saying more of it here than we generally do of translations or reprints.

The first part is devoted to "General Pterylography," and, after a few preliminary remarks, treats of the structure of feathers and their principal differences. A perfect feather consists of six parts—(1) stem, (2) aftershaft, (3) barbs, (4) barbules, (5) barbicels, and (6) hooklets, the development of which is fully explained. There are three principal forms of feathers—(1) pennaceous, (2) downy, and (3) filoplumaceous. Again, feathers are of four different kinds—(1) contour- or surface-feathers, (2) down-feathers, (3) semiplumes, and (4) filoplumes. Next the distribution of the plumage of birds in definite tracts is considered. Nine such tracts (*pterylæ*) clothed with contour-feathers (some of which are in pairs) may be distinguished; in particular (1) the dorsal, (2) humeral, (3) femoral or lumbar, and (4) inferior; but in a few birds there are besides (5) lateral neck-tracts; and the other parts similarly covered furnish (6) the head, (7) alar, (8) crural, and (9) caudal tracts. Between these occur featherless

spaces (*apteria*), especially (1) the lateral neck-, (2) the lateral trunk-, and (3) the inferior spaces, besides, more or less commonly, (4) the spinal, (5) upper wing-, (6) lower wing-, (7) crural, and (8) head-spaces. These tracts and spaces are then treated of generally, and subsequently each by itself, after which a chapter is devoted to the curious "powder-down feathers" found only in some birds; and another chapter, on the anal oil-gland, concludes the first part of the work.

The second part relates to "Special Pterylography;" and birds are taken group by group, the arrangement being based on their pterylological characters as follows:—

Accipitrinæ: (I.) *Acc. diurnæ.* A. Old-world Vultures. B. New-world Vultures. C. Falcons. (II.) *Acc. nocturnæ.*

Passerinæ: (1) *Corvinæ*, (2) *Paradiseidæ*, (3) *Ampelidæ*, (4) *Tanagridæ*, (5) *Fringillidæ* (*Conirostres*), (6) *Sturnidæ*, (7) *Dentirostres* (*Laniidæ*, *Muscicapidæ*), (8) *Subulirostres*, (9) *Certhiaceæ*, (10) *Hirundinidæ.*

Picariæ: (1) *Macrochires*, (2) *Caprimulginæ*, (3) *Todidæ*, (4) *Cuculinæ*, [5 caret; an errore?], (6) *Picinæ*, (7) *Psittacinæ*, (8) *Lipoglossæ*, (9) *Amphibolæ.*

Columbinæ: (1) *Columba*, (2) *Pterocles.*

Gallinæ: (1) *Tetraonidæ*, (2) *Phasianidæ*, (3) *Penelopidæ*, (4) *Crypturidæ.*

Platysternæ: [*Struthiones.*]

Grallæ: (1) *Alectorides*, (2) *Fulicariæ*, (3) *Erodii*, (4) *Pelargi*, (5) *Odontoglossi*, (6) *Hemiglottides*, (7) *Limicolæ.*

Natatores: (1) *Longipennes*, (2) *Nasutæ*, (3) *Unguirostres*, (4) *Steganopodes*, (5) *Pygopodes.*

We have not space to indicate the further subdivisions, and it is to be regretted that there is no extended paradigm of the classification in the work itself; but this want is probably to be ascribed to the natural diffidence of the editors, both German and English.

The volume is most unnecessarily and inconveniently published in folio. To it are added, by way of Appendix, reprints of Mr. Bartlett's paper "On the Affinities of *Balæniceps*" (Proc. Zool. Soc. 1861, pp. 131–134) and Mr. Sclater's "On the Structure of *Leptosoma discolor*" (Zool. Rec. ii. p. 88), as well as of the author's 'Observationes de Avium Arteria carotide communi' (Halæ: 1829). (*Cf.* Ibis, 1865, p. 118, 1868, pp. 96–98; Journ. Anat. & Physiol. vol. ii. p. 391.)

Sclater, P. L. [See Nitzsch.]

Tschusi, Victor von. Notizen über Farbenvarietäten bei Vögeln. Verhandl. k. k. zool.-bot. Gesellsch. Wien, 1867, pp. 687–692.

Thirty-four species are enumerated, in which variations of colour have been observed.

NEOSSOLOGY.

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

The young of *Alcedo ispida*, *Sitta europæa*, *Starna perdix*, *Pyrgita montana*, *Calamoherpe arundinacea* (Gm.), *Fringilla cælebs*, *Mecistura caudata*, *Passer italiæ*, *Merula vulgaris*, *Caprimulgus europæus*, *Picus major*, *Scops zorca*, *Palumbus torquatus* (fig. opt.!), *Turdus viscivorus*, *Athene noctua*, *Chlorospiza chloris*, *Parus major*, *Emberiza citrinella*, and *Garrulus glandarius* are figured.

GOULD, JOHN. The Birds of Great Britain. London: 1867.

Part XI. contains figures of the young of *Pelidna cinclus*, and Part XII. those of *Merula torquata* and *Œdemia fusca*.

MARCHAND, ALB. Poussins des oiseaux d'Europe couverts de duvet à la sortie de l'œuf. Rev. et Mag. de Zool. 1867.

The species represented during the past year are:—

Tetrao urogallus	pl. 4	Otis tarda	pl. 10
Anas sponsa	„ 5	Numenius arquatus	„ 11
Pandion haliætus	„ 6	Anser ægyptiacus	„ 12
Tetrao tetrix	„ 7	Anas boschas	„ 13
Totanus glareola	„ 8	Ardea minuta	„ 23
—— calidris	„ 9	Anas crecca	„ 24

No letterpress accompanies this series of plates (*cf.* Zool. Rec. iii. p. 70).

OOLOGY AND NIDIFICATION.

BÆDEKER, F. W. J. Die Eier der europäischen Vögel, nach der Natur gemalt. Mit einer Beschreibung des Nestbaues gemeinschaftlich bearbeitet mit L. BREHM und W. PÆSSLER. Supplement. Leipzig und Iserlohn. Fol.

This consists of four sheets of letterpress, published, we believe, at the end of last year. Its authorship must be ascribed to Herr Pässler, who has here supplied some short supplementary notices to the accounts of various species mentioned in the work in which he had a hand, and which work was completed in 1863. (*Cf.* Ibis, 1868, p. 341.)

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

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

Scops zorca (2), *Athene noctua* (2), *Strix flammea* (2), *Starna perdix*, *Sturnus vulgaris* (3), *Petrocossyphus cyaneus* (2), *Monticola saxatilis* (2), *Saxicola œnanthe* (3), *Pratincola rubetra* (2), *Philomela luscinia* (2), *Chelidon urbica* (2), *Cotyle riparia* (2), *Gecinus viridis* (2), *Yunx torquilla* (5), *Alcedo ispida*, *Upupa epops* (2), *Columba livia* (3), *Palumbus torquatus* (2), *Turtur auritus* (2), *Cypselus melba*, *C. apus* (2), *Ardeola minuta* (3), *Ardea purpurea* (2), *Phasianus colchicus* (2); and on Plate II. those of:—

Curruca atricapilla (8), *Sylvia cinerea* (4), *Certhia familiaris* (3), *Sitta europæa* (3), *Passer italiæ* (6), *Alauda arborea* (5), *Parus major* (6), *Butalis grisola* (6), *Caprimulgus europæus* (4), *Coturnix communis* (5).

BLASIUS, RUDOLF. Ueber die Bildung, Structur und systematische Bedeutung der Eischaale der Vögel. Zeitschr. für

wissensch. Zoologie, 1867, pp. 480–524, pls. xxix., xxx. [Also Leipzig: 1867. 8vo, pp. 48, pls. 2.]

In consequence of Dr. Landois's investigations (Zool. Rec. ii. pp. 85, 86) the author was led to the microscopical examination of egg-shells, but finds therein little, if any, help to classification. The layers of which the shell is composed vary, and this is especially the case with the main layer. Copious lists of writers who have before treated the subject are given. (*Cf.* Ibis, 1868, pp. 228, 229.)

Brown, J. A. H. Extracts from a Journal of a Nesting-Tour in Sutherland in 1867. Zoologist, Second Series, pp. 851–865.

The extracts are followed by a list of the birds of the western part of the county, but none not hitherto recorded as found there were met with.

Euler, Carl. Beiträge zur Naturgeschichte der Vögel Brasiliens.

For a notice of these "Contributions," which contain much valuable oological information, see above ("Neotropical Region"), p. 68.

Finsch, Otto, und Hartlaub, G. Beitrag zur Fauna Centralpolynesiens, u. s. w.

Some general remarks on this work will be found above ("Australian Region"). Eggs of the following are figured (not too well):—

Ptilotis carunculata, Taf. i. fig. 2 (and nest).
Merula vanicorensis, Taf. i. fig. 3.
Aplonа tabuensis, Taf. i. fig. 4.
Artamus mentalis, Taf. i. fig. 5.
Rhipidura nebulosa, Taf. i. fig. 6.
Zosterops flaviceps, Taf. i. fig. 7.
Astur cruentus, Taf. ii. fig. 1, and Taf. xiv. figg. 1, 2.
Platycercus splendens, Taf. ii. fig. 2.
Ptilinopus fasciatus, Taf. ii. fig. 3.
Chrysœna luteovirens, Taf. ii. fig. 4.
Megapodius pritchardi, Taf. ii. fig. 5.
Didunculus strigirostris, Taf. iii. fig. 1.
Porphyrio vitiensis, Taf. iii. fig. 2.
Rallus pectoralis, Taf. iii. fig. 3.
Rallina pœciloptera, Taf. iii. fig. 4, and Taf. xiv. fig. 8.
Puffinus nugax, Taf. iii. fig. 5.
Dysporus sula, Taf. iii. fig. 6.
Sterna panaya, Taf. iv. figg. 1–3.
Anous cinereus, Taf. iv. figg. 4, 5.
Circus assimilis, Taf. xiv. fig. 3.
Collocalia spodiopygia, Taf. xiv. fig. 4 (and nest).
Myiagra castaneiventris, Taf. xiv. fig. 6.
Columba vitiensis, Taf. xiv. fig. 7.

Grandidier, A. Observations sur le gisement des œufs de l'Epiornis. Compt. Rendus, lxv. pp. 476–478.

The locality where remains of *Æpyornis* have been found is in the south-western part of Madagascar, near Cape St. Mary. The eggs lie in sandy dunes, and are usually exposed by the action of running water. Though probably living at no distant date, the bird, without doubt, no longer exists. (*Cf.* Ibis, 1868, pp. 65–68.)

Hector, James. Notice of an Egg of the Great Moa (*Dinornis*

gigantea), containing remains of an embryo, found in the province of Otago, New Zealand. Proc. Zool. Soc. 1867, pp. 991, 992.

It measured 8·9 in. by 6·1 in., and its surface was much decayed. The bones it contained, when compared with similar specimens of *Dromæus*, show an enormous disproportion in the massiveness and form as regards the extremities, with very slight difference in the cranium and total length. No wing-bones are mentioned.

Joly, N. Sur un œuf d'*Epiornis* [lege *Æpyornis*] *maximus* vu récemment à Toulouse. Compt. Rendus, lxv. pp. 422–424.

This specimen was found by the owner, M. Nau, about eleven years ago, in Madagascar, twenty leagues from the sea. It is considerably larger than either of those in the Museum at Paris.

Müller, Adolf, und Karl. Das Nisten der Vögel. Zool. Garten, 1867, pp. 96–100, 137–143, 172–178, 208–216, 250–259.

These articles contain a great variety of general remarks on nidification, but apparently no very novel facts are recorded.

Newton, Alfred. On some New or Rare Birds' Eggs. Proc. Zool. Soc. 1867, pp. 161–168, pl. xv.

This paper was read in 1865 (Zool. Rec. ii. p. 91), but its publication postponed in consequence of an accident. The eggs of *Nucifraga caryocatactes, Didunculus strigirostris, Opisthocomus cristatus, Tryngites rufescens, Tringa minutilla, Phalaropus fulicarius*, and *Totanus flavipes* are figured, and those of *Chroicocephalus ichthyaetus, Mareca americana, Fulix affinis, Œdemia perspicillata*, and *Mergus cucullatus* are described.

Ramsay, E. P. Note on the Nidification of *Baza subcristata*. *Tom. cit.* 1867, pp. 392–394.

——. Note on the Eggs of the Australian Stilt-Plover (*Himantopus leucocephalus*). *Tom. cit.* p. 600.

——. Illustrations of Australian Oology. Ibis, 1867, pp. 413–421, pls. viii., ix.

Contains good accounts of the mode of breeding of *Biziura lobata, Pitta strepitans, Parra gallinacea, Choriotis australis, Lobivanellus lobatus*, and *Sarciophorus pectoralis*, with figures of their eggs, drawn in Australia under the author's superintendence.

Rowley, G. D. On the Egg of *Æpyornis*, the Colossal Bird of Madagascar. Proc. Zool. Soc. 1867, pp. 892–895.

Seven more or less perfect specimens of the egg of *Æ. maximus* have been found, besides fragments. Some of the last indicate that they belonged to a smaller species, now called *Æ. grandidieri*. (See *Æpyornithidæ*.)

Samuels, Edward A. Ornithology and Oölogy of New England, &c. Boston: 1867. 8vo, pp. 583, pls.

Of the general scope of this work we have already spoken (*suprà*, pp. 67, 68). Four of the plates are devoted to illustrations of the eggs; but the figures only give a general idea of what the originals are like, and are entirely wanting in specific character, though most are figured for the first time. The following is a list of them:—

Plate I. *Hypotriorchis columbarius, Tinnunculus sparverius, Accipiter fuscus, Buteo lineatus, B. pennsylvanicus*; Plate II. *Myiarchus crinitus, Parula americana, Siurus noveboracensis, Dendrœca virens, Sitta carolinensis, S. canadensis, Zonotrichia albicollis, Junco hyemalis, Spizella monticola, Guiraca ludoviciana, Icterus spurius, Scolecophagus ferrugineus*; Plate III. *Tetrao canadensis, Ægialitis vociferus, Æ. semipalmatus, Philohela minor, Gallinago wilsoni, Actiturus bartramius, Rallus virginianus, Porzana carolina*; Plate IV. *Larus argentatus, Chroicocephalus atricilla, Sterna wilsoni, S. frenata.*

Saunders, Howard. A Birdsnesting Trip to the North of Ireland. Zoologist, S. S. pp. 609–624.

No species appears to have been noticed that was not previously known as frequenting the district.

Westerlund, Carl Agardh. Skandinavisk Oologi. Udbredning, Bo och Ägg af Sveriges och Norges foglar jemte Ornithologisk Exkursions-Fauna. Stockholm: 1867. pp. 250.

In apparent unconsciousness of M. O. des Murs's 'Oologie Ornithologique,' the author states that his is the first attempt to bring oology into system, or to treat that study scientifically. The result, according to his determination of oological characters, is that *Upupa* stands between *Mergulus* and *Alca*, and *Regulus* between *Anthus* and *Ibis*. It must not, however, be thought from this that the author is in favour of such an arrangement; on the contrary, a systematic list, based on Prof. Sundevall's classification, concludes the volume. In describing the eggs of birds, Herr Westerlund adopts four categories:—(1) Ovate (*ovata*), (2) Oval (*ovala*), (3) Pear-shaped (*päronformiga*), and (4) Spindle-shaped (*spolformigt*). (*Cf.* Ibis, 1868, pp. 113, 114.)

Wiese, —. Ueber Abänderungen in der Färbung der Vogeleier. Journ. für Orn. 1867, pp. 73–82.

This paper contains the result of many observations on the variation in the colour of birds' eggs; but, so far as we can gather from it, the author does not arrive at any very definite conclusions on this neglected subject.

Phaethornis eurynomus, its egg and nest figured. (See under *Trochilidæ*.)

Piprisoma agile, its nest and egg figured. R. C. Beavan, Ibis, 1867, pp. 314, 315, pl. x.

Syrrhaptes paradoxus, its eggs (laid in confinement) described. A. von Homeyer, J. f. O. 1867, p. 37.

Chionis minor, its egg described. E. L. Layard, Ibis, 1867, pp. 458, 459.

ACCIPITRES.

Prof. Huxley (Proc. Zool. Soc. 1867, pp. 462–465) goes into some detail with respect to the division of the *Aetomorphæ* or *Accipitres*. They appear to him to fall into four well-defined primary groups, which he names *Strigidæ*, *Cathartidæ*, *Gypaetidæ*, and *Gypogeranidæ*. The first is coextensive with the usually assigned limits of the family; the second comprises the Vultures of the New World, *Cathartes* and *Sarcorhamphus*; the third the Vultures of the Old World, with the *Falconidæ* in the ordinary acceptation of the term, excepting *Gypogeranus*, which, alone, forms the fourth family. These groups are not merely based, like many of the others proposed by the author (see "General Subject"), on modifications of the palatal structure, but on characters drawn from various parts of the skeleton, combined with pterylographical peculiarities. Being so, we cannot but regard them as worthy the deepest attention, since the arrangement they indicate is probably quite natural, and will probably be followed by us in future.

Falconidæ.

"*Aquila riparia*, P. Würt." (Naumannia, 1857, p. 432), is *A. imperialis*, T. v. Heuglin, J. f. O. 1867, p. 290.

Aquila nævioides, *A. clanga*, and *A. nævia*, notes on. J. Vian, R. Z. 1867, pp. 129–137, 207, 208.

Aquila nævioides, a permanent resident in Bulgaria. W. H. Cullen, Ibis, 1867, pp. 247, 248.

"*Aquila nævioides*, P. Würt." (Naumannia, 1857, p. 432) (*nec* Cuv.), is *A. minuta*. T. v. Heuglin, J. f. O. 1867, p. 292.

Aquila imperialis in captivity. O. Herklotz, Sitzungsb. z.-b. Gesellsch. Wien, 1867, pp. 59, 60.

Aquila pennata, Mr. Dresser's note on its nidification in Spain (Zool. Rec. iii. p. 72) reprinted. Zoologist, S. S. pp. 803–807.

Haliaetus leucocephalus is thought to have occurred in Ireland. J. A. H. Browne, Zool. S. S. pp. 562, 563.

Haliaetus pelagicus is figured. D. G. Elliot, B. N. Am. part vi.

Pandion haliœetus is one and the same species all over the world, though specimens from the Atlantic coasts of America are somewhat larger than those of the Pacific. J. H. Gurney, Ibis, 1867, pp. 464, 465.

"*Helotarsus leuconotus*, P. Würt." (Naumannia, 1857, p. 432), is distinct from, or at least a conspecies of, *H. ecaudatus*, being smaller, and having more slender bill and feet, the outermost row of wing-coverts, with the secondaries and tertials, pure black, and the scapulars also much shorter. T. v. Heuglin, J. f. O. 1867, pp. 291, 292. (*Cf.* T. v. Heugl. Sitzungsb. k. k. Akad. Wien, 1856, p. 200, and J. H. Gurney, Ibis, 1868, pp. 140, 141.)

Milvago crassirostris (Zool. Rec. ii. p. 91), if distinct, should stand as *M. megalopterus* (Meyen). P. L. Sclater, P. Z. S. 1867, p. 329; differs very slightly, if at all, from *M. montanus*. P. L. Sclater and O. Salvin, P. Z. S. 1867, p. 988.

Leucopternis superciliaris, Von Pelzeln (Sitz. Ak. Wien, xliv. p. 10) is iden-

tified with *L. kuhli*, Bp. (Consp. Av. i. p. 19), and *L. kaupi*, Bp. (R. Z. 1850, p. 481). P. L. Sclater & O. Salvin, P. Z. S. 1867, pp. 589, 590.

Buteo delalandii. O. des Murs (R. Z. 1862, p. 52) (*cf.* Ibis, 1862, pp. 361–363). The young of this obscure species described. J. V. Barboza du Bocage, Jorn. Scienc. Lisboa, March 1867, pp. 131, 132.

Buteo zonocercus is figured. D. G. Elliot, B. N. Am. part viii.

"*Buteo longipes*, P. Würt." (Naumannia, 1857, p. 432), is *B. ferox*. T. v. Heuglin, J. f. O. 1867, p. 292.

Baza madagascariensis (A. Smith) is figured. H. Schlegel & F. P. L. Pollen, Rech. Faun. Madag. pp. 45–47, pl. 16. figs. 1, 2.

Baza subcristata, note on its nidification. E. P. Ramsay, P. Z. S. 1867, pp. 392–394.

Machærhamphus alcinus (Zool. Rec. iii. p. 73) is figured. J. H. Gurney, Trans. Zool. Soc. vi. pp. 117, 118, pl. xxix.

Circus æquipar, Cuv. (*C. swainsoni*, A. Smith), has occurred in Holland, and a very complete account of the species is given. J. P. van Wickevoort-Crommelin, Arch. Néerl. 1867, pp. 66–75.

Circus jardinii is figured. S. Diggles, Orn. Austral. part xii.

Circus cyaneus and *C. cinereaceus* (♂ and ♀) are figured. J. Gould, B. Gr. Br. part xii.

Circus cinereaceus and *C. pallidus* are figured. C. J. Sundevall, Sv. Fogl. pl. lxxii. figs 2–4.

Milvus migrans has occurred at Alnwick, in Northumberland. J. Hancock, Ibis, 1867, p. 253; N. H. Trans. Northumb. & Durh. i. p. 283.

"*Milvus isuroides*, P. Würt." (Naumannia, 1857, p. 432), is supposed to be *M. parasiticus* juv. T. v. Heuglin, J. f. O. 1867, p. 293.

"*Genaëa venerata*, P. Würt." (Naumannia, 1857, p. 432), is *Falco lanarius græcus*, Schleg. (Mus. P.-B. *Falcones*, p. 15). T. v. Heuglin, J. f. O. 1867, p. 290.

Falco peregrinoides is distinct from *F. barbarus*. J. Vian, R. Z. 1867, pp. 174–176.

Falco peregrinus, *F. anatum*, and *F. nigriceps* are specifically identical, but about the Straits of Magellan occurs a really distinct race, closely allied to the Australian *F. melanogenys*. J. H. Gurney, Ibis, 1867, pp. 465, 466.

Falco sacer is figured. C. J. Sundevall, pl. lxxii. fig. 1.

Falco rufipes in captivity. O. Herklotz, Sitzungsb. z.-b. Gesellsch. Wien, 1867, pp. 65, 66.

Falco frontatus is figured. S. Diggles, Orn. Austral. part xi.

Falco concolor, Temm. [?], from Madagascar is described and figured. H. Schlegel and F. P. L. Pollen, Rech. Faun. Madag. pp. 31, 32, pl. 12, fig. 1.

"*Falco ruficapillus*, P. Würt." (Naumannia, 1857, p. 432), is *F. ruficollis*, Sw. T. v. Heuglin, J. f. O. 1867, p. 290.

Falco newtoni, *F. punctatus*, and *F. gracilis* (Zool. Rec. ii. p. 92) are now admitted to be distinct species, and figured as such. H. Schlegel & F. P. L. Pollen, Rech. Faun. Madag. pp. 32–35, pl. 11, figs. 1–5.

KAUP, J. J. On the *Nisi* and *Astures* of the Indian Archipelago and of New Holland. Proc. Zool. Soc. 1867, pp. 168–179, figs.

A paper the gist of which we do not pretend entirely to understand—possibly because it is a translation. Subgenera are

now given up by the author and raised to genera. Four of these, *Teraspiza*, *Tachyspiza*, *Erythrospiza*, and *Uraspiza* (lege *Urospiza*) among the *Nisi*, and two, *Lophospiza* and *Leucospiza*, among the *Astures*, all of which occur in the region indicated, are considered. Their characters are very minutely indicated, at such a length that their reproduction here is impossible for want of space, while it would be equally impossible to condense them. *Teraspiza* and *Erythrospiza* (nec *Erythrospiza*, Bp. 1830 !) appear to be new. The former is made to contain *Falco virgatus*, Reinw., *Nisus rhodogaster*, Schl., *F. minullus*, Daud., and *F. tinus*, Lath.; the latter *F. trinotatus*, Temm., *F. hiogaster*, S. Müll., and *Astur griseogularis*, G. R. Gray (with which is united *A. henicogrammus*, G. R. Gray, *Accipiter æquatorialis* and *A. muelleri*, Wall., and *Nisus cruentus*, Schl.). The author lays great stress on characters drawn from the bill and form of the wing, illustrating his remarks by woodcuts, and says that the length of the toes has no generic value in these groups. *Nisus sulaensis* (Zool. Rec. iii. p. 72) is referred with five other species to *Urospiza*.

Accipiter chilensis (Zool. Rec. ii. p. 93); a Spanish version of its description. L. Landbeck, Anal. Univers. Chili, 1864, pp. 345–348.

Accipiter badius [sc. *brevipes*, Zool. Rec. ii. p. 93] should be admitted to the European fauna.—Alléon, R. Z. 1867, pp. 3–5.

Accipiter ventralis (Zool. Rec. iii. p. 73), *A. chionogaster*, *A. erythrocnemis*, and *A. castanilius* are figured. P. L. Sclater & O. Salvin, Ex. Orn. pls. 13, 14, 17, and 18.

Nisus polleni is described as a new species from Madagascar. A. Grandidier, R. Z. 1867, p. 85. [It is omitted, however, from the subsequent lists of the same author, *tom. cit.* pp. 256, 320, 321.]

Nisus brutus, *N. moreli*, *N. lantzi*, and *N. francesi* [lege *franciscæ*] (Zool. Rec. ii. pp. 92, 93, iii. pp. 73, 74) are fully described and figured. H. Schlegel & F. P. L. Pollen, Rech. Faun. Madag. pp. 35–38, pl. 12. figs. 2, 3, pls. 13, and 14. figs. 1–3.

"*Astur leucomelas*, P. Würt." (Naumannia, 1857, p. 432), is supposed to be *Nisus verreauxi*, Schl. (Mus. P.-B. *Astures*, p. 37), and not *A. melanoleucus*, A. Smith (S. Afr. Q. Journ. i. p. 229).

Astur novæ-hollandiæ is figured. S. Diggles, Orn. Austral. part xv.

Micrastur macrorhynchus (Zool. Rec. ii. p. 93) is identical with *Astur mirandollii*, Schl. (Mus. P.-B. *Astures*, p. 27). P. L. Sclater & O. Salvin, P. Z. S. 1867, p. 759.

Strigidæ.

Strix flammea, observations on its food, similar to those formerly made on other species (*cf.* Zool. Rec. ii. p. 93, iii. p. 74). B. Altum, Zoolog. Garten, 1867, pp. 262–266;—Jäckel, *tom. cit.* pp. 463–471.

Strix indica is separated as a distinct species. It is *S. javanica*, Jerd. (B. Ind. j. p. 117), and *S. flammea*, Gould (P. Z. S. 1859, p. 151), from Siam. E. Blyth, Ibis, 1866, pp. 250, 251.

Strix castanops, head figured. S. Diggles, Orn. Austral. part xiii.

"*Ninox affinis*, Tytler," is described as a new species from the Andamans, closely allied to *N. scutellatus* (Raffles), but considerably smaller, much more rufous above, and darker beneath. R. C. Beavan, Ibis, 1867, p. 316.

Syrnium cinereum is specifically identical in Europe and North America. J. H. Gurney, Ibis, 1867, p. 465.

Athene whitelii is separated as the Japanese form of *A. cuculoides*, which it entirely resembles except in the comparatively few markings upon the flight-feathers of the wings. E. Blyth, Ibis, 1867, pp. 312, 313.

Athene noctua, *Nyctale tengmalmi*, and *Surnia funerea* are figured. J. Gould, B. Gr. Br. part xi.

"*Bubo selenotis*, P. Würt." (Naumannia, 1857, p. 432), is *B. cinerascens*, Guér.-Ménev. (R. Z. 1843, p. 321), which is identical with *Strix maculosa*, Vieill. T. v. Heuglin, J. f. O. 1867, p. 293.

"*Scops fazoglensis*, P. Würt." (Naumannia, 1857, p. 432), is *S. senegalensis*, Swains. T. v. Heuglin, J. f. O. 1867, p. 293.

Scops madagascariensis is described as a new species. A. Grandidier, R. Z. 1867, pp. 85, 86. Identified with *S. menadensis*. *Id. tom. cit.* pp. 255, 321.

Scops kennicotti is described as an apparently new species, from Sitka, in size between *S. asio* and *Otus wilsonianus* with a curious concealed tuft of white feathers just above the ears. D. G. Elliot, Proc. Acad. N. S. Philad. 1867, pp. 99, 100.

Scops zorca and *Athene noctua* are figured. E. Bettoni, Ucc. Lomb. tavv. 17, 20.

PSITTACI.

Finsch, Otto. Die Papageien, monographisch bearbeitet. Erster Band. Mit einer Karte und einer lithographirten Tafel. Leiden: 1867. Roy. 8vo, pp. 561.

This, for its size the most elaborate monograph with which we are acquainted in ornithological literature, is the first volume of the work of which we last year (Zool. Rec. iii. p. 75) noticed a separately printed portion relating to the geographical distribution of the group. The second volume has not yet appeared; but the first contains the whole of the first and a portion of the second of the two parts into which the author divides his subject, these two parts comprising (I.) the General and (II.) the Special natural history of the Parrots. After a brief introduction and explanation of the terms used, Herr Finsch gives (1) an historical and literary survey, containing notices of the Parrots known in ancient (pp. 4–6) and mediæval (pp. 6–8) times, the literature relating to them from Aldrovandi to the present day (pp. 8–26), the plan of the work now before us (pp. 27–34), and a polyglot vocabulary of the different names by which the birds are known in various languages (p. 34). To this succeeds (2) an account of their habits (*Aeusseres Leben*), with particulars of their sociability (p. 38), migrations (pp. 39, 40), places of abode (pp. 40–43), daily functions (pp. 43, 44), foresight (pp. 44, 45), voice (pp. 46–49), and food (pp. 49–52), the mode of tending them (pp. 52–57), their duration of life (pp. 57–59), sicknesses (p. 59), mode of breeding (pp. 59–70), and mischievousness (pp. 70–72),

the mode of taking them (pp. 73–74) and their utility (pp. 75–80). Then follows (3) the treatise on their geographical distribution both horizontally and vertically (pp. 81–114), which (as just said) we noticed last year, after which the author treats (4) of their talent for wit (*Geistesanlagen*) (pp. 115–129), and (5) of their form and external structure, in which are considered at greater or less length the bill (pp. 130–140) and (when it exists) the bare skin (p. 140), the wings (pp. 140–145), the tail (pp. 145–147), and, finally, the feet (pp. 147, 148). To this succeeds (6) an account of the feathers, comprising the pterylography (pp. 149, 150), forms of the feathers (pp. 151–153), their colouring (pp. 153–158), moulting and changes (pp. 159–166), and variation (pp. 166–170). The next division of the work (7) is devoted to anatomy, including splanchnology (pp. 171–182) and osteology (pp. 182–211), with a plate representing the skeleton of *Psittacus erithacus* and the skulls of *Plictolophus sulphureus* and *Euphema pulchella*; and an essay on their systematic arrangement (8), followed by a list of genera and species, concludes the first part of the work.

The second part of the work, treating of the special natural history of the group, contains descriptions of the genera and species of *Stringops, Callipsittacus, Plictolophus, Nasiterna, Calyptorrhynchus, Microglossus, Sittace, Henicognathus,* and *Conurus*, with which this volume ends.

The number of species of Parrots described has been more than doubled since Wagler in 1832 published his 'Monographie Psittacorum'*; and as the number of works that have appeared in the interim have been very numerous and at the same time scattered, it seemed advisable to the author to collect in the present monograph all the information bearing on the subject that could be obtained. He has had the advantage of working chiefly on the rich material afforded by the Leyden Museum, besides that offered by the still richer (in species) British Museum. He has also enjoyed remarkable facilities in consulting types in various other collections both private and public; so that of the 350 species recognized and enumerated by him, there are only 20 which he has not himself examined, and of these 8 are possibly not good ones, viz. *Sittace leari, Dasyptilus fulgidus, Chrysotis erythrura, C. bouqueti, Psittacula swindereni, Domicella stavorinii, D. cardinalis,* and *Nestor norfolciensis*. He intends to add an appendix, including 41 still doubtful species. Only one species (*Bolborrhynchus luchsi*) will be described as entirely new; but virtually three or four others may be so considered from their having been confounded with their allies. Very numerous and careful details are constantly given with respect to the colours of the soft parts (chiefly derived from living birds in the Zoological Gardens of London and Amsterdam), and measurements. In

* Abhandl. mathem.-physik. Classe k. bayer. Acad. Wissensh. Band i.

the matter of nomenclature Herr Finsch is a purist, and more names are in consequence changed than seems to us quite necessary: for example, he follows Van der Hoeven in writing *Stringops* instead of *Strigops*, and refuses to acknowledge any but classically formed generic names; but on the whole this part of the subject, like all the rest, is treated with sound judgment.

The Parrots are regarded by the author as forming one family, *Psittacidæ*, of the Zygodactyl (*Paarzehen*) order, and are divided by him into five subfamilies—(1) *Stringopinæ*, (2) *Plictolophinæ*, (3) *Sittacinæ*, (4) *Psittacinæ*, and (5) *Trichoglossinæ*, the first containing the genera *Stringops*, the second *Callipsittacus*, *Plictolophus*, *Nasiterna*, *Calyptorrhynchus*, and *Microglossus*, the third *Sittace*, *Henicognathus*, *Conurus*, *Palæornis*, *Brotogerys*, *Bolborrhynchus*, *Melopsittacus*, *Pezoporus*, *Euphema*, and *Platycercus*, the fourth *Psittacus*, *Dasyptilus*, *Eclectus*, *Pionias*, *Chrysotis*, *Psittacula*, and *Coryllis* (Finsch), the fifth *Domicella*, *Trichoglossus*, and *Nestor*—26 genera on the whole, and an assignment very different from that of Mr. Wallace (*cf.* Zool. Rec. i. pp. 53–55) hitherto followed in this 'Record.'

In the special part Herr Finsch furnishes a very complete synonymy and diagnosis of each species, accompanied by a full description of many specimens from localities as various as possible, and very copious tables of dimensions.

Such is a very imperfect abstract of this valuable work, the execution of which we cannot sufficiently praise. (*Cf.* Zoolog. Garten, 1867, pp. 318–320.)

Milne-Edwards, Alphonse. Mémoire sur un Psittacien fossile de l'île Rodriguez. Ann. Sc. Nat. 5ᵉ sér. Zool. viii. pp. 144–156, pls. 7, 8; Comptes Rendus, lxv. (Dec. 30, 1867) pp. 1121–1125.

Among the bones of *Pezophaps solitarius* obtained from Rodriguez by Mr. Edward Newton was the distal portion of the maxilla of a Parrot, which the author, after careful comparisons similar to those he before instituted in the case of *Psittacus mauritianus* (Zool. Rec. iii. pp. 75, 76), refers to an undescribed, and doubtless extinct, species, having relation to the genus *Eclectus*; but he prefers calling it in general terms *Psittacus rodericanus*, leaving its precise determination until further remains shall have been discovered. The plates contain figures of the maxillæ of the other forms of *Psittaci* in illustration of his researches.

Schlegel, F. Uebersicht der Papageien unserer zoologischen Gärten. Zoolog. Garten, 1867, pp. 32–34, 72–75. Nachtrag, *tom. cit.* pp. 229–231.

A nominal list, with a few synonyms, of 130 species exhibited in various Zoological Gardens in Europe. *Coracopsis mascarina* seems to be the most remarkable of them, but in which garden it is to be found is not mentioned. The supplement includes the names of 44 more.

Plyctolophidæ.

Cacatua ducorpsi, *C. ophthalmica* (Zool. Rec. i. p. 68), and *C. triton* are specifically distinct, notwithstanding Prof. Schlegel's assertion (Zool. Rec. iii. p. 76) to the contrary. P. L. Sclater, P. Z. S. 1867, p. 184.

Cacatua leadbeateri (head) and *C. eos* are figured. S. Diggles, Orn. Austral. parts xi. and xiv.

Plictolophus buffoni, from Samao, near Timor, differs from *P. sulfureus* from Celebes, with which it has hitherto been confounded, by being smaller and with a weaker bill, and almost wanting the yellow cheek-patch. O. Finsch, Papageien, i. pp. 300–303.

Platycercidæ.

Geopsittacus occidentalis, Gould (P. Z. S. 1861, p. 100), in confinement: it is of nocturnal habit. P. L. Sclater, P. Z. S. 1867, p. 891. Figured, J. Gould, B. Austral. Suppl. part iv.

Psittacidæ.

Palæornis wardi is a new species from the Seychelles, like *P. alexandri*, but with a stouter bill, the humeral bands purplish-red and wanting the red nuchal band. E. Newton, P. Z. S. 1867, p. 346; Ibis, 1867, p. 341.

"*Palæornis affinis*, Tytler," is described as a new species, from the Andamans, generally like *P. erythrogenys*, but having a black bill. R. C. Beavan, Ibis, 1867, p. 320. [It is *P. erythrogenys* ♀ juv. E. Blyth, Ibis, 1868, p. 132.]

Loriculus edwardsi is the name given to the species described by Gmelin as *Psittacus indicus*, though coming from Ceylon. E. Blyth, Ibis, 1867, p. 295. The new name disapproved of. Ld. Walden, *tom. cit.* pp. 467, 468.

Caracopsis barklyi is a new species from Praslin in the Seychelles resembling *C. comorensis* in colour, but much smaller. E. Newton, P. Z. S. 1867, pp. 346, 347, pl. xxii. (*ad vivum*); Ibis, 1867, p. 341. In confinement. P. L. Sclater, P. Z. S. 1867, p. 473.

Cyclopsitta coxeni is a new species from Queensland, nearly allied to *C. diophthalma* of Mysol, but wanting the scarlet on the crown and having less of it on the cheeks. J. Gould, P. Z. S. 1867, pp. 182, 183. Figured. *Id.* B. Austral. Suppl. part iv.

Polyteles alexandræ (Zool. Rec. i. p. 69) is figured. *Id. loc. cit.*

Euphema chrysostoma and *E. splendida* (♂ & ♀) are figured. S. Diggles, Orn. Austral. part xiii.

Ara ambigua (Bechst.) from Mexico and *A. militaris* (L.) from New Granada are diagnosed. The first is larger, with a larger bill, the mandible especially, the crown variegated with yellow and green; the second is smaller, with a moderately sized bill and the crown entirely green. P. L. Sclater, P. Z. S. 1867, p. 183.

Ara rubrogenis, Lafresnaye (R. Z. 1847, p. 65), is proposed to be called *Sittace lafresnayii*. O. Finsch, Papageien, i. p. 394.

Conurus carolinensis, note on its variation in colour. W. Niemeier, Zoolog. Garten, 1867, p. 268.

Conurus æruginosus, *C. chrysogenys*, *C. xantholæmus*, *C. ocularis*, and *C. chrysophrys* are united with *C. pertinax*. O. Finsch, Papag. i. pp. 506–517. The opposite opinion entertained. P. L. Sclater & O. Salvin, P. Z. S. 1867, pp. 587, 588.

TRICHOGLOSSIDÆ.

Lorius chlorocercus, Gould (P. Z. S. 1856, p. 137), from the Salomon Islands, is figured. P. L. Sclater, P. Z. S. 1867, pp. 183, 184, pl. xvi.

Trichoglossus chlorolepidotus and *T. concinnus* are figured. S. Diggles, Orn. Austral. part xii.

PICARIÆ.

PICIDÆ.

Picus medius has occurred in Finland. A. von Nordmann, Œfvers. Finska Vet.-Soc. Förh. viii. pp. 58, 59.

Picus pernii is a new species from Northern China, somewhat resembling *P. cattipharius*, but differing in its whitish rump, a black band extending down its belly, and a red patch on its breast. J. P. Verreaux, R. Z. 1867, pp. 171, 271, 272, pl. xvi.

Picus major is figured. E. Bettoni, Ucc. Lomb. tav. 16.

Colaptes chrysoides is figured. D. G. Elliot, B. N. Am. part vi.

Celeus citreopygius is an undescribed species from Yurimaguas in Eastern Peru. It has hitherto been confounded with *C. jumana*, but is more nearly allied to *C. citrinus*, having the underside of the primaries unspotted. P. L. Sclater & O. Salvin, P. Z. S. 1867, pp. 758, 759 (*cf. tom. cit.* p. 586).

Dendrobates nigrogularis is described as a new species from Capangombe. J. V. Barboza du Bocage, Jorn. Sc. Lisboa, 1867, p. 336.

CORACIIDÆ.

Fifteen species belonging to this family, and referred to the genera *Coracias*, *Brachypteracias*, and *Eurystomus*, are represented in the Leyden Museum by 105 mounted specimens, the series of *E. orientalis* consisting of 78 examples. H. Schlegel, Mus. P.-B. *Coraces*, pp. 132–143.

MEROPIDÆ.

Merops superciliosus, *M. ægyptius*, and *M. savignii* are only different stages of the same species. O. Finsch, J. f. O. 1867, pp. 239–245.

Merops apiaster is figured. J. Gould, B. Gr. Br. part xi.

ALCEDINIDÆ.

KUTTER, —. Ueber das Brutgeschäft von *Alcedo ispida*, L. Journ. für Orn. 1867, pp. 38–45.

Many original observations on this subject.

Halcyon pealii is a new species from Huaheina very like *H. sacra* (with which it has been confounded by Lesson and Prof. Schlegel), but with a blue cap and some other differences. O. Finsch & G. Hartlaub, Beitr. Faun. Centralpolyn. pp. 38–40.

H. cassini is a new species from the Feejee Islands, partly confounded by Mr. Cassin, under the name of *Todirhamphus vitiensis*, a synonym of *H. sacra*, with that bird, from which it differs in having only a narrow white line

extending from the nostrils under the eyes. *Iidem, tom. cit.* pp. 40, 41, and 276.

Dacelo leachi and *Tanysiptera sylvia* (ad. & juv.) are figured. S. Diggles, Orn. Austral. parts xii. and xv.

Capitonidæ.

Sclater, P. L. Barbets and their Distribution. Intell. Observ. Nov. 1867, pp. 241–246.

A popularly written summary of the chief peculiarities of the family, illustrated by a plate representing *Megalæma asiatica*. From the facts adduced relating to the distribution of the different members of the family, the author urges the probability of the derivative theory of species.

"*Bucco aurifrons*, P. Würt." (Naumannia, 1857, p. 433), is *Barbatula chrysocoma*. T. v. Heuglin, J. f. O. 1867, p. 300.

Rhamphastidæ.

Cassin, John. A study of the *Ramphastidæ* [lege *Rhamphastidæ*]. Proc. Acad. Nat. Sc. Philadelphia, 1867, pp. 100–124.

Another of the author's valuable monographs. Of the numerous so-called genera into which the family has been split, he is content with five only, using the names of the rest, with half a dozen new ones, to indicate minor groups. These genera and groups are as follows:—(i) *Ramphastos* [lege *Rhamphastus*], containing five divisions: (1) *Rhamphastus* with two species, (2) *Burhynchus* and (3) *Tucanus* with six each, (4) *Ramphodryas* [*Rhamphodryas*] with two species and three varieties of *R. ariel*, and (5) *Tucaius* with one species—these last four names being apparently used for the first time; (ii) *Pteroglossus*, including (1) *Pteroglossus* proper with eleven species and three varieties of *P. castanotis*, (2) *Grammarhynchus* [lege *Grammatorhynchus*] with three species, (3) *Pyrosterna* with five, and (4) *Beauharnaisius* and (5) *Baillonius* (a new name) each with one species—*P. aldrovandi* (Shaw) being a doubtful species; (iii) *Selenidera*, comprising (1) *Selenidera* proper with five species, and (2) *Piperivorus* and (3) *Ramphastoides* [lege *Rhamphastoides*] (a new name) with one each; (iv) *Aulacorhamphus* and (v) *Andigena* are each composed of two divisions, the former of (1) *Aulacorhamphus* proper with five and (2) *Rhamphoxanthus* with six species, and the latter of (1) *Andigena* proper with three species and (2) *Rhamphomelas* with two. Besides these Mr. Cassin enumerates some other described species of *Rhamphastus*, which he cannot determine. No species are described as new.

Bucerotidæ.

"*Toccus nasutus*, var. *infuscatus*, P. Würt." (Naumannia, 1857, p. 433), is *T. pœcilorhynchus*. T. v. Heuglin, J. f. O. 1867, p. 300.

Upupidæ.

"*Rhinopomastes cyanoleucus*, P. Würt." (Naumannia, 1857, p. 433), partly rests on *Irrisor senegalensis*, juv., and partly on *R. aterrimus*. T. v. Heuglin, J. f. O. 1867, p. 301.

Upupa epops, its habits during incubation. D. Scott, Ibis, 1867, pp. 135, 136.

Falculia palliata is figured. H. Schlegel & F. P. L. Pollen, Rech. Faun. Madag. pl. 33, figs. 1, 2.

Cuculidæ.

Cuculus canorus ♀ is supposed to have removed the eggs from the nest of *Anthus aquaticus*, in which her own had been hatched. E. Baldamus, Zeitschr. gesammt. Naturwiss. 1867, pp. 100, 101. Remarks on its oviposition. C. Jex, Zoolog. Garten, 1867, pp. 76–78 and 355, 356; A. Müller, *tom. cit.* pp. 156–159, 374–390, 409–415, 449–457; E. Baldamus, *tom. cit.* pp. 193–197; W. Jesse, Zoologist, S. S. p. 914. Herr Müller argues strongly against the theory of Dr. Baldamus (*cf.* Zool. Record, ii. p. 99). The same theory considered: A. C. Smith, Wiltshire Magazine (*cf.* Ibis, 1867, pp. 374, 375, 469, 470).

Cuculus infuscatus (Zool. Rec. iii. p. 80) is figured. O. Finsch & G. Hartlaub, Beitr. Faun. Centralpolyn. Taf. v. fig. 1.

Cuculus (*Cacomantis*) *castaneiventris* is a new species from Cape York, resembling *C. flabelliformis* in form, but smaller and with shorter wings. It is closely allied to a Philippine species, probably *C. sepulchralis*, Bp., and more distantly to *C. bronzina*, G. R. Gray. J. Gould, Ann. & Mag. N. H. 3rd ser. xx. p. 269. Figured: *Id.* B. Austral. Suppl. part iv.

Hierococcyx nisioides is characterized as a new species from Nepaul, like *H. sparverioides*, but conspicuously smaller. E. Blyth, Ibis, 1866, p. 362.

Chrysococcyx caprius has no cæca. C. Barron, Ibis, 1867, pp. 145, 146.

Coua coquereli, *C. cursor*, *C. verreauxi*, *C. pyropyga*, together with *Centropus sakalava* and *C. leucuropyga*, are described as new species from Madagascar. The first three seem to be good; but the fourth is subsequently identified with *C. cristata*, and the fifth and sixth with *C. lafresnayanus* [Zool. Rec. iii. p. 80]. A. Grandidier, R. Z. 1867, pp. 86, 87, 255, 256, 391, 392, 417.

"*Centropus andamanensis*, Tytler," is described as a new species, from the Andamans, smaller than *C. rufipennis* and wanting the black markings of that bird. R. C. Beavan, Ibis, 1867, p. 321.

Dromococcyx rufigularis is described as a new species from Guatemala, much smaller than *D. phasianellus*, and with weaker feet. The coloration is also different. G. N. Lawrence, Proc. Ac. Philad. 1867, p. 233.

Caprimulgidæ.

Sclater, P. L. Bemerkungen über die amerikanischen Caprimulgiden. Journ. für Orn. 1867, pp. 252–278.

A translation of the first of the two papers by the same author noticed last year (Zool. Rec. iii. p. 81).

Caprimulgus brachyurus is described as a new species from the Aru Islands, recognizable especially by its dark colour and short tail. H. von Rosenberg, Natuurk. Tijdschr. Nederl. Ind. xxix. (1866) p. 143.

Caprimulgus welwitschi is described as a new species from Angola, allied to *C. rufigena*, A. Smith, and *C. fossi*, Verr., but more rufescent beneath, and considered to be distinct from either. J. V. Barboza du Bocage, Jorn. Sc. Lisboa, 1867, p. 133.

Caprimulgus europæus is figured. E. Bettoni, Ucc. Lomb. tav. 15.

"*Scotornis macrocercus* and *S. longissimus*, P. Würt." (Naumannia, 1857, p. 433), are identical with *S. climacurus*. T. v. Heuglin, J. f. O. 1867, p. 297.

Semiophorus vexillarius (Zool. Rec. iii. p. 82) is perfectly distinct from *Caprimulgus* (*Macridopteryx*) *longipennis*. G. Hartlaub, Arch. für Naturg. xxxiii. Jahrg., 2, p. 10; P. Z. S. 1867, pp. 821, 822.

Nyctibius bracteatus is figured. P. L. Sclater and O. Salvin, Ex. Orn. pl. 20.

Cypselidæ.

Sclater, P. L. Bemerkungen über die Genera und Species der Cypseliden. Journ. für Orn. 1867, pp. 112–141.

A translation of the paper formerly noticed by us (Zool. Rec. ii. pp. 99, 100).

Cypselus acuticauda is a new species, supposed to be from Nepaul, differing chiefly from *C. leuconyx* in the absence of the white rump-band. E. Blyth, Ibis, 1865, p. 45.

Cypselus dubius, Antinori (Zool. Rec. i. pp. 72, 73), is probably only the young of *C. murarius* (sc. *apus*). T. von Heuglin, J. f. O. 1867, p. 201.

Cypselus gutturalis, Vieill., is distinct from *C. melba*, and "*C. barbatus*, Temm.," Sclater, P. Z. S. 1865, p. 599, from *C. apus*, of which they are the South-African representatives. H. B. Tristram, P. Z. S. 1867, p. 887 (*cf.* J. H. Gurney, Ibis, 1868, p. 152).

Nephoecetes niger is figured. D. G. Elliot, B. N. Am. part v.

Chætura grandidieri is a new species from the east coast of Madagascar, in appearance resembling *Phedina borbonica*. J. P. Verreaux, Bull. N. Arch. Mus. iii. pp. 3–5, pl. i.; H. Schlegel & F. P. L. Pollen, Rech. Faun. Madag. pp. 65, 66.

Chætura brachycerca is a new species from Xeberos in Eastern Peru, remarkable for its short tail. P. L. Sclater & O. Salvin, P. Z. S. 1867, p. 758, pl. xxxiv.

Collocalia francica with nest is figured. C. Coquerel, Album de la Réunion, 1865, pp. 21–24, fig. 1.

"*Collocalia affinis*, Tytler," is described as a new species from the Andamans. R. C. Beavan, Ibis, 1867, p. 318. [Apparently the same as *C. linchi*. E. Blyth, *op. cit.* 1868, pp. 131, 132.]

Trochilidæ.

Glaucis æneus is described as a new species from Costa Rica, differing from *G. hirsuta* in the bronze colour above and also in being smaller. Like *G. affinis* it has a well-marked tail-band, but it is of a deeper black. G. N. Lawrence, Proc. Acad. Philad. 1867, p. 232.

Phaethornis eurynomus, its nest and egg figured. C. F. Dubois, Arch. Cosmol. 1867, pl. ix. p. 163. [N.B. The roseate colouring of the egg is said to

be due to the reddish lichen (*Spiloma roseum*) of which the nest is partly composed.]

Doricha bryantæ is a new species from Costa Rica, allied to *D. evelynæ* and *D. elizæ*, with a longer bill and narrower tail than the former, and a less brilliant throat than the latter, besides other differences. G. N. Lawrence, Ann. Lyc. N. York, 1867, pp. 483, 484.

Aglæactis olivaceocauda is described as a new species from Peru. G. N. Lawrence, Ann. Lyc. N. York, 1867, pp. 470–472. [A comparison of the types proves it to be identical with *A. caumatonota*, Gould (P. Z. S. 1868, p. 12). O. Salvin, Ibis, 1868, p. 115.]

Heliomaster spectabilis is described as a new species from Costa Rica. G. N. Lawrence, Ann. Lyc. N. York, 1867, pp. 472, 473. [It is the female of a species of *Eugenes* and probably of *E. fulgens* (Swains.). O. Salvin, Ibis, 1868, pp. 115, 251.]

Oreopyra venusta and *O. cinereicauda* are described as new species from Costa Rica. The last is allied to *O. leucaspis*, but having a grey instead of a steel-blue tail. G. N. Lawrence, Ann. Lyc. N. York, 1867, pp. 484, 485. [*O. venusta* is identical with *O. calolæma*, as a comparison of the types prove. O. Salvin, Ibis, 1868, p. 115.]

Thaumatias luciæ is described as a new species from Honduras, much like *T. linnæi*, except as to the tail, the under surface of which closely resembles *T. chionopectus*. G. N. Lawrence, Proc. Ac. Philad. 1867, p. 233.

Eupherusa nigriventris is described as a new species from Costa Rica, with a combination of colours of unusual character, but allied probably to *E. eximia*. *Id. tom. cit.* pp. 232, 233.

PASSERES.

Pittidæ.

Pitta mackloti [?] has occurred at Cape York, North Australia; and *P. strepitans* [?] from the same locality differs from more southern specimens in its smaller size, markings, and shape of the bill and feet. G. Krefft, P. Z. S. 1867, p. 319.

Pitta mackloti [?] (ex Australia) is figured. S. Diggles, Orn. Austral. part xiv. (*Cf.* Ibis, 1868, p. 348.)

Philepitta jala and *P. schlegeli* (Zool. Rec. iii. p. 86) are figured. H. Schlegel and F. P. L. Pollen, Rech. Faun. Madag. pp. 87–89, pls. 31, figs. 1–3, and 32, figs. 1–3.

Formicariidæ.

"*Thamnophilus murinus*, Natterer," is an undescribed species from Cayenne, Northern Brazil, and Eastern Peru, allied to *T. cærulescens* and *T. amazonicus*. P. L. Sclater & O. Salvin, P. Z. S. 1867, p. 756.

Thamnophilus hyperythrus, Gould (Ann. & Mag. N. H. 2nd ser. xv. 1855, p. 346) is *Myrmelastes plumbeus* ♀, Sclater (P. Z. S. 1858, p. 274). *Idem, tom. cit.* p. 981.

Thamnophilus tenuifasciatus and *T. nigrescens* are two new species belonging to the same group as *T. doliatus*. The first is from the Rio Napo, and has the transverse lines narrow and more clearly defined than any of the others; the second is from Venezuela, and differs strikingly in its much blacker appearance, without the greyish character prevailing in the lower

plumage of its allies. G. N. Lawrence, Ann. Lyc. N. York, 1867, pp. 468–470.

Myrmotherula cinereicentris is an undescribed species from Cayenne, Surinam, Ecuador, and Eastern Peru, allied to *M. axillaris*, but entirely cinereous beneath. P. L. Sclater & O. Salvin, P. Z. S. 1867, p. 756.

Percnostola fortis is a new species from Eastern Peru, in form and appearance like *P. funebris*, but larger, and with the wings unspotted externally. P. L. Sclater & O. Salvin, P. Z. S. 1867, p. 980, pl. xlv.

Phlogopsis macleannani is figured. P. L. Sclater & O. Salvin, Ex. Orn. pl. 9.

Menuridæ.

Menura superba in confinement. P. L. Sclater, P. Z. S. 1867, p. 391; F. C. Noll, Zoolog. Garten, 1867, pp. 266, 267, fig. Its habits in confinement; considered to be allied to the *Paradiseidæ*. A. D. Bartlett, P. Z. S. 1867, pp. 688, 689.

Pteroptochidæ.

Hylactes castaneus is figured. P. L. Sclater & O. Salvin, Ex. Orn. pl. 20.

Dendrocolaptidæ.

"*Certhilauda nigrofasciata*," Philippi and Landbeck (Zool. Rec. ii. p. 103), is only *Geositta cunicularia*. P. L. Sclater, P. Z. S. 1867, p. 324.

Synallaxis crassirostris (Zool. Rec. iii. p. 87) is identical with *S. dorbignii*, Reich. (Handb. Sp. Orn. p. 163), which has been wrongly referred by Lafresnaye and D'Orbigny (Mag. Zool. 1836, p. 24) to *S. humicola*, Kittl. (Mém. Ac. Pétersb. 1830, tab. 6). P. L. Sclater & O. Salvin, P. Z. S. 1867, p. 986.

Philydor fuscipennis is a new species from Veragua, allied to *P. pyrrhodes*, Cab., but the rump and tail more rufescent and darker, the back more of a cinnamon colour, and the body beneath browner. O. Salvin, P. Z. S. 1866, p. 72, 1867, p. 143.

Philydor virgatus is a new species from Costa Rica, making the third of this genus now observed north of the Isthmus of Panama. G. N. Lawrence, Ann. Lyc. N. York, 1867, p. 468; O. Salvin, Ibis, 1868, p. 114.

Dendrocolaptes radiolatus is a new species from Yurimaguas in Eastern Peru, allied to *D. cayennensis* and *D. sancti-thomæ*; but this last is smaller, has the back rufous, unbarred, the radiations are much closer, and it has a smaller and nearly black bill. P. L. Sclater & O. Salvin, P. Z. S. 1867, p. 755.

"*Dendrornis mentalis*, Baird," is a new species from Mazatlan, having a very close resemblance to *D. eburneirostris*, but with larger feet, a paler coloration, and dusky margins to the chin-feathers. G. N. Lawrence, Ann. Lyc. N. York, 1867, pp. 481, 482.

Meliphagidæ.

"*Zosteropisylvia icterovirens*, P. Würt." (Naumannia, 1857, p. 433), is described. It is a true *Zosterops*, and a distinct species. A list of the other four known species of the genus from north-eastern Africa is added. T. v. Heuglin, J. f. O. 1867, p. 295.

Zosterops modesta and *Z. semiflava* are two new species, the first from Mahé in the Seychelles, dusky-grey, with a white ring round the eye, and black lores; the second from Marianne in the same group, very like *Z. polio-*

gastra, Heugl. (Ibis, 1861, p. 357), but with the belly and abdomen entirely yellow and bay flanks. E. Newton, P. Z. S. 1867, pp. 345, 346; Ibis, 1867, pp. 345, 346, and 354.

Zosterops flaviceps, Peale, from the Feejees (♂, ♀, and nest) is figured. O. Finsch & G. Hartlaub, Beitr. Faun. Centralpolyn. taf. vi.

Zosterops, the distribution of the species in the Mascarene Islands stated. H. Schlegel & F. P. L. Pollen, Rech. Faun. Madag. pp. 71–76. (Correction of errors in the statement: Ibis, 1868, p. 225.)

Ptilotis procerior is a new species from the Feejee Islands, in general colour resembling *P. caruneulata*, but easily to be distinguished by the situation of the bare skin on the cheek, and especially in the want of the lappet extending from the gape. The heads of both species are figured. O. Finsch and G. Hartlaub, Beitr. Faun. Centralpolyn. pp. 62–64, taf. v. figg. 2, 3.

Ptilotis notata is a new species from Cape York, allied to *P. chrysotis* and *P. gracilis*, but larger than the latter and with a longer and stouter bill than the former. It is also allied to *P. assimilis* of the Aru Islands. J. Gould, Ann. & Mag. N. H. 3rd ser. xx. pp. 269, 270.

Ptilotis leadbeteri is described as a new species from Victoria, allied to *P. auricomis*, but easily distinguished by its greater size, subcrested head, blackish upper colouring, shorter and thicker bill, and the larger and more deeply coloured ear-plumes. F. M'Coy, Ann. & Mag. N. H. 3rd ser. xx. p. 442.

Ptilotis flavigula, *P. filigera*, and *P. chrysotis* are figured. S. Diggles, Orn. Austral. part xiv.

Ptilotis cassidix (Zool. Rec. iii. p. 88) is figured. J. Gould, B. Austral. Suppl. part iv.

Myzomela jugularis, Peale, from the Feejees, and *M. nigriventris*, Peale, from Upolu (ad. & juv.) are figured. O. Finsch & G. Hartlaub, Beitr. Faun. Centralpolyn. taf. vii. figg. 1–4.

Mimus caruneulatus (Zool. Rec. iii. p. 57) is referred to *Anthochæra* and called *A. bulleri*. O. Finsch, J. f. O. 1867, pp. 342, 343.

Tropidorhynchus corniculatus and *T. argenticeps* are figured. S. Diggles, Orn. Austral. part xi.

Anthornis ruficeps is a new species from New Zealand. A. v. Pelzeln, Verhandl. k. k. zool.-bot. Gesellsch. 1867, p. 316; O. Finsch, J. f. O. 1867, p. 341.

Melithreptus validirostris (head), *M. gularis*, *M. lunulatus* (head), *M. brevirostris* (head), *M. albogularis*, and *M. melanocephalus* are figured. S. Diggles, Orn. Austral. part xii.

Myzantha garrula, *M. flavigula*, and *M. melanophrys* are figured. S. Diggles, Orn. Austral. part xv.

Nectariniidæ.

Nectarinia natalensis, Antinori (Cat. Ucc. Affr. centr. p. 33) (*nec* Jardine), "*N. acik*, Ant.," Hartmann (J. f. O. 1866, p. 205), is *N. senegalensis*, Von Heuglin (J. f. O. 1864, p. 262), and only differs from *N. senegalensis* (L.) in the darker colour of its upper parts. T. von Heuglin, J. f. O. 1867, p. 202.

Nectarinia gonzenbachi (Zool. Rec. i. p. 75) is "*N. erythrocerca*, Heugl." Hartl. (Orn. West Afr. p. 270). *Idem, loc. cit.*

"*Cœreba gutturalis* (L.)," Bp. (Consp. Av. i. p. 400), is a *Nectarinia*, and

identical with *N. natalensis*, Jard. (*nec* Antin.), and *Cinnyris discolor*, Bianc. It comes from Zanzibar. G. Hartlaub, P. Z. S. 1867, pp. 824, 825.

Nectarinia, sp.?, from Capangombe, is described but not named. It resembles *N. hypodilus*, Jard. & Fras. (Contr. Orn. 1851, p. 153), but is easily distinguished by its colour below, which is not yellow but white. J. V. Barboza du Bocage, Jorn. Scienc. Lisboa, 1867, pp. 332, 333.

Nectarinia dabrii is a new species from Northern China, belonging to the long-tailed group which contains *N. nipalensis*, but differing from all others in the whitish tips to the outer rectrices. J. P. Verreaux, R. Z. pp. 170, 173, 174, pl. xv.

Nectarinia coquereli is figured. H. Schlegel & F. P. L. Pollen, Rech. Faun. Madag. p. 71, pl. 18. fig. 1.

Nectarinia osea and *N. insignis* (Zool. Rec. ii. p. 104), *N. zeylonica*, *N. gouldiæ*, and *N. saturata* are figured. J. Gould, B. As. part xix.

Piprisoma agile, with young, nest, and eggs, is figured. R. C. Beavan, Ibis, 1867, pp. 430, 431, pl. x.

Cœrebidæ.

Cœreba gutturalis (L.) is a *Nectarinia* (q. v.). G. Hartlaub, P. Z. S. 1867, pp. 824, 825.

Cotingidæ.

Heteropelma wallacii is a new species from Para on the Lower Amazons, allied to *H. amazonum* from the Upper waters, but more greenish above and not tinged with rufous, the throat and abdomen being paler and more ash-coloured. P. L. Sclater & O. Salvin, P. Z. S. 1867, p. 579.

Hadrostomus albiventris is described as a new species from Western Mexico, differing from the allied species in its much lighter plumage, the rose-colour on the neck in front being lighter and more restricted than in *H. affinis*. G. N. Lawrence, Ann. Lyc. N. York, 1867, pp. 475, 476. [One of the many forms of *H. aglaiæ*, and perhaps hardly to be considered distinct. O. Salvin, Ibis, 1868, p. 115.]

Rupicola sanguinolenta is figured. P. L. Sclater & O. Salvin, Ex. Orn. pl. 15.

Ampelioides is the name given to a new genus, of which the type is described and figured as a new species, *A. flavitorques*, from the Rio Napo. J. P. Verreaux, Bull. N. Arch. Mus. iii. pp. 5, 6, pl. 2. fig. 1. [Identified with *Ampelion cinctus*, Tschudi (P. Z. S. 1855, p. 152, pl. civ.). P. L. Sclater, Ibis, 1868, p. 222.]

Sclater, P. L. The Bell-birds of America. Intell. Observer, x. pp. 401–408.

A popularly written account of the genus *Chasmorhynchus*, illustrated by a coloured figure of *C. nudicollis*. The manner in which the four known species of the genus may have descended on Darwinian principles from an original *C. priscus* is ingeniously set forth in a diagram.

Ampelidæ.

Ampelis garrulus visited the British Isles, in unusual abundance, during the winter of 1866–67. J. Hancock, N. H. Trans. Northumb. & Durh. i. pp. 281, 282; E. Newman, Zoologist, S. S. pp. 560, 561; A. Clark-Kennedy,

tom. cit. p. 561; J. Cordeaux, *tom. cit.* p. 591; H. Stevenson, *tom. cit.* p. 596; J. A. H. Brown, *tom. cit.* pp. 606 & 907; T. E. Gunn, G. Garrett, and J. G. Overend, *tom. cit.* pp. 633, 634; H. L. Saxby, *tom. cit.* p. 689; H. Blackmore, *tom. cit.* p. 704. Its occurrence in Germany at the same season, G. Herpell, Zool. Garten, 1867, p. 159; A. Schöpff, *tom. cit.* p. 160: in Switzerland (where it had not appeared since 1811), — Girtanner, *tom. cit.* pp. 159, 160, and 280; B. Altum, *tom. cit.* p. 197; A. Röse, *tom. cit.* p. 270; — Favre, Bull. Soc. Sc. Nat. Neuchâtel, vii. p. 513.

Pachycephala græffii (Zool. Rec. iii. p. 89) ♂ and *P. vitiensis*, Gray, ♀, are figured. O. Finsch & G. Hartlaub, Beitr. Faun. Centralpolyn. taf. viii. figg. 2, 3.

Pardalotus xanthopygus is described "as a new species" from Victoria. It belongs to the section which wants the wax-like appendages to the wing-feathers, and most resembles *P. punctatus*, but differs from it in having a more slender bill, white spots on the upper back, paler abdomen, greyish flanks, and conspicuously in the lower back being bright yellow. F. M'Coy, Ann. & Mag. N. H. 3rd ser. xix. p. 184 (March 1867). Under the name "*P. xanthopyge*" it was exhibited 11 Feb., 1867, as "a new species recently described." *Id.* Trans. & Proc. R. S. Victoria, viii. part i. p. 41 (May 1867); Ann. & Mag. N. H. 3rd ser. xx. p. 177. The same species was also described as new 28 Feb., 1867, before the Zoological Society of London, under the name "*P. leadbeateri*, Ramsay:" Ibis, 1867, pp. 255, 256. First described "in the 'Australasian' newspaper of Melbourne"! F. M'Coy, *op. cit.* 1868, p. 122. Figured: J. Gould, B. Austral. Suppl. part iv.

Timaliidæ.

Garrulax rubiginosus and *G. poliocephalus* are two undescribed species in the Derby Museum of Liverpool from South-eastern Asia. E. Blyth, Ibis, 1865, p. 46.

Garrulax sannio is a new species from Middle China. R. Swinhoe, *tom. cit.* pp. 402, 403.

Garrulax leucogaster was the name proposed (P. Z. S. 1866, p. 549) for the Siamese race of *G. belangeri*. It is now identified with *Turdus diardi*, Less. Ld. Walden, Ibis, 1867, pp. 381, 382.

Garrulax delesserti and *G. gularis* are figured. J. Gould, B. As. part xix.

Timalia quadristriata and *T. bicolor* are two undescribed species in the Derby Museum of Liverpool, probably from Malacca. The former is akin to *T. leucotis*, Strickl.; the latter like *T. erythroptera*, but dark ashy, with a rufous mantle, wings, and tail. E. Blyth, Ibis, 1865, pp. 46, 47.

"*Myiothera murina*, S. Müller," is [apparently] an undescribed species. Together with *M. nigrogularis*, Temm., it is referred to *Turdinus*, and the first is the smallest of the group. E. Blyth, Ibis, 1865, p. 47.

Hirundinidæ.

Hirundo anchietæ is described as a new species from Benguela. J. V. Barboza du Bocage, Jorn. Scienc. Lisboa, 1867, p. 150; *Id. tom. cit.* p. 338.

Hirundo æquatorialis (Zool. Rec. iii. p. 90) appears to be readily distinguishable. P. L. Sclater & O. Salvin, P. Z. S. 1867, p. 979.

"*Hirundo andamanensis*, Tytler," is described as a new species from the Andamans. R. C. Beavan, Ibis, 1867, pp. 316, 317.

"*Hirundo velocissima*, P. Würt." (Naumannia, 1857, p. 433), is identical with "*H. fuscicapilla*, Heugl. Mus. Stuttg.," but no description is furnished. T. v. Heuglin, 1867, p. 297.

Phedina borbonica is figured. C. Coquerel, Album de la Réunion, 1865, pp. 19, 20, fig. 2.

Hirundo euchrysea, var. *dominicensis*, differs from the Jamaican form by its smaller bill, and in wanting the golden edging to the tertials and greater coverts. H. Bryant, Proc. Bost. Soc. N. H. 1866, p. 95.

Chelidon urbica imprisoning *Passer domesticus* in its nest. A. Clark-Kennedy, Zoologist, S. S. p. 915.

Oriolidæ.

Twenty-five species of this family, all referred to the genus *Oriolus*, are represented in the Leyden Museum by 221 mounted specimens. H. Schlegel, Mus. P.-B. *Coraces*, pp. 98–116.

"*Oriolus icterus*, P. Würt." (Naumannia, 1857, p. 433), is supposed to be an immature *O. bicolor*. T. v. Heuglin, J. f. O. 1867, p. 300.

"*Oriolus andamanensis*, Tytler," is "provisionally" described as a new species from the Andamans. R. C. Beavan, Ibis, 1867, pp. 326, 327. (*Cf.* J. A. S. B. 1859, p. 272.)

Pycnorhamphus cucullatus is described as a new species from the Ké Islands. H. von Rosenberg, Natuurk. Tijdschr. Nederl. Ind. xxix. (1866) p. 143. Identical with *Sphecotheres flaviventris*, Gould. H. Schlegel, N. T. D. iii. pp. 342, 343.

Edoliidæ.

"*Edolius affinis*, Tytler," is described as a new species from the Andamans, having no frontal crest whatever, and the head-feathers approaching those of *Irrhinga*. R. C. Beavan, Ibis, 1867, pp. 323, 324. Probably a race of *E. rangoonensis*, Gould (P. Z. S. 1836, p. 5). Ld. Walden, *loc. cit.*

Vireonidæ.

Hylophilus rubrifrons and *H. semicinereus* are described and figured as new species from the Amazons. The first is easily distinguishable by its red front and rufous tail; for though *H. ochraceiceps* has a rufous tail, it is of a more ochraceous tinge. The second is readily recognizable by its uniform pale cinereous colour below. P. L. Sclater & O. Salvin, P. Z. S. 1867, pp. 569, 570, pl. xxx. figs. 1, 2.

Vireo plumbeus, *V. vicinior*, *V. swainsoni*, and *V. pusillus* (Zool. Rec. iii. p. 91) are figured. D. G. Elliot, B. N. Am. part viii.

Tyrannidæ.

Muscisaxicola albifrons is distinct from *Tæniopteræ alpina* with which it had been united (Ibis, 1866, p. 57), being much larger, and the upper parts of a paler colour. *M. rubricapilla* (Zool. Rec. ii. p. 106) is carefully described. P. L. Sclater & O. Salvin, P. Z. S. 1867, pp. 986, 987.

Tyrannula stolida, var. *lucaysiensis*, from the Bahamas, is described as larger than either *T. stolida* of Jamaica or the Cuban *T. sagræ*, but resembling the latter most in colour. H. Bryant, Proc. Boston Soc. N. H. 1866, pp. 66, 67.

Tyrannula stolida, var. *dominicensis*, from Eastern St. Domingo, is described as differing from *T. sagræ* and *T. bahamensis* in the distinct yellow abdomen, and from *T. stolida* in the very much broader rufous outer edging of the primaries. *Id. tom. cit.* pp. 90, 91.

T. carribæa, var. *hispaniolensis*, is described from Western St. Domingo. *Id. tom. cit.* p. 91.

Tyranniscus gracilipes is an undescribed species from Pebas in Eastern Peru and Venezuela, most nearly resembling *T. parvus*, Lawr. (Ibis, 1862, p. 12); but the last has a white throat and breast. P. L. Sclater & O. Salvin, P. Z. S. 1867, p. 981.

Myiodynastes superciliaris is a new species from Costa Rica, most resembling *M. chrysocephalus* (Tsch.) from Peru; but that has a stouter bill, the feathers surrounding the crest and on the sides of the head are of a clear ash-colour, the throat is buff, and the breast-feathers are olivaceous in the middle. G. N. Lawrence, Ann. Lyc. N. York, 1867, p. 470. [It is probably *Hypermitres chrysocephalus*, Cab. (J. f. O. 1861) from Costa Rica. O. Salvin, Ibis, 1868, p. 115.]

Contopus pertinax is figured. D. G. Elliot, B. N. Am. part vi.

Dicruridæ.

"*Melasoma nigerrima*, P. Würt." (Naumannia, 1857, p. 433), is *Melænornis melas*, Heugl. (Sitz. k.-k. Akad. Wien, 1856, p. 284). T. v. Heuglin, J. f. O. 1867, p. 296.

Dicrurus marginatus is a new species in the Derby Museum at Liverpool, probably from South-eastern Asia. E. Blyth, Ibis, 1865, p. 46.

Dicrurus waldeni (Zool. Rec. ii. pp. 107, 108) is figured. H. Schlegel & F. P. L. Pollen, Rech. Faun. Madag. pp. 80, 81, pl. 23.

Dicrurus macrocercus apparently preys on young birds. D. Scott, Ibis, 1867, p. 136.

"*Dicrurus andamanensis*, Tytler," is a new species, peculiar in having hair-like feathers springing from the nostril. R. C. Beavan, Ibis, 1867, p. 323.

Dicrurus musicus is parasitic in its mode of feeding. E. L. Layard, Ibis, 1867, pp. 460, 461.

Dicrurus bracteatus is figured. S. Diggles, Orn. Austral. part xi.

Laniidæ.

Walden, [Arthur Hay] Viscount. On the Rufous-tailed Shrikes. Ibis, pp. 211–226, pls. v., vi.

The species so termed are those belonging to the group separated by Bonaparte as *Otomela* (R. Z. 1853, p. 436–438), a name which the author does not adopt. In this group the males have a plumage similar to that of the females of *Lanius collurio* and *L. bucephalus*; and their relationship to the first shows itself most in *L. cristatus*. The species of the group have all rufous tails and no white speculum on the primaries; but they are also in great confusion, which the author has successfully, as it seems to us, reduced. Eight species are referred to it, and their synonymy and tables of dimensions of specimens from various localities are given in much detail. All but one belong to the Indian

Region. *Lanius isabellinus*, H. & E., from Arabia, is noticed as a transitional link, having a white alar bar; and this, with *L. phœnicurus*, Pall. (which has occurred in Europe: Naumannia, 1858, pp. 320, 425; Ibis, 1862, p. 66), and *L. magnirostris* ♂ & ♀, form the subjects of the plates.

Lanius pallidus (Zool. Rec. i. p. 78) is, according to De Filippi, identical with *L. pallidirostris*, Cassin (Proc. Acad. Philad. 1851, p. 244). T. v. Heuglin, J. f. O. 1867, p. 204.

Lanius minor occurred in Scilly in 1851, but was previously recorded (Zool. p. 3300) as *L. excubitor*. E. H. Rodd, Journ. R. Inst. Cornw. Oct. 1867, pp. 352, 353, Zool. S. S. p. 703 (*cf. tom. cit.* pp. 555–557, 605, 606).

Lanius melanthes is described as a new species from Middle and Southern China, at first appearance like a melanine form of *L. schach*, L. R. Swinhoe, Ibis, 1867, pp. 404, 405. [Identified with *L. fuscatus*, Less. (Tr. d'Orn. p. 373), but an important rediscovery of a lost species. Ld. Walden, Ibis, 1868, pp. 68–70.]

"*Malaconotus leucometopon* and *M. albicollis*, P. Würt." (Naumannia, 1857, p. 432), are identical with *Lanius nubicus*, Licht. T. v. Heuglin, J. f. O. 1867, p. 203.

Dryoscopus sublacteus, Cassin, a supposed young bird described. G. Hartlaub, P. Z. S. 1867, pp. 825, 826.

Laniarius modestus is a new species from Benguela, noticeable for the absence of any superciliary mark. J. V. Barboza du Bocage, Jorn. Scienc. Lisboa, 1867, p. 151.

Vanga (*Xenopirostris*) *dami* (Zool. Rec. ii. p. 108) is figured. H. Schlegel & F. P. L. Pollen, Rech. Faun. Madag. pl. 30. figs. 1, 2.

Oreœca cristata is figured. S. Diggles, Orn. Austral. part xi.

Artamus sordidus, *A. superciliosus*, and *A. leucopygialis* are figured. *Id. op. cit.* part xiii.

Campephagidæ.

Ceblepyris, a supposed new species from Kamamil, in the Duke Paul of Würtemberg's collection, is described, but not named. T. v. Heuglin, J. f. O. 1867, pp. 303, 304.

Graucalus layardi is an undescribed species from Southern India and Ceylon. It is *G. papuensis*, Sykes, and Jerdon, and *Campephaga macii*, Layard, and is of the same small size as *G. javensis*, having the anterior surface of the wing strongly barred underneath, and the outer rectrices very slightly tipped with white. E. Blyth, Ibis, 1866, p. 368.

Artamia bernieri, the type specimen figured. H. Schlegel & F. P. L. Pollen, Rech. Faun. Madag. p. 86, pl. 25.

Pachycephala rufa is figured. *Iid. ut suprà*, pp. 86, 87, pl. 26. figs. 1, 2.

Muscicapidæ.

Monarcha godeffroyi is a new species from the island of Yap, near the Mateotas, nearly allied to *M. rugensis*, from the Hogoleu group; but the distribution of the colours is different. G. Hartlaub, P. Z. S. 1867, p. 829, pl. xxxviii.

M. fulviventris is described as a new species from the Bougainville (Echiquier) Islands, nearly allied to *M. inornata*, Less. (Voy. Coquille, Zool. pl. 15, fig. 1), but differing in the colour of the abdomen and secondary remiges. Another species of similar colouring is *M. cinerascens* (Temm.) from Timor. *Id. tom. cit.* p. 830.

Monarcha lessoni, Hombr., is figured. O. Finsch & G. Hartlaub, Beitr. Faun. Centralpolyn. taf. vii. fig. 5.

Myiagra albiventris and *M. castaneiventris* (♂ & ♀) are figured. *Iid. ut suprà*, taf. ix. figs. 1–3.

Myiagra tytleri is described as a new species, from the Andamans, in general appearance like *M. azurea*, but larger, and the male entirely wanting the black throat usually present in that bird. Beneath it is more dully and above brighter coloured. R. C. Beavan, Ibis, 1867, p. 324.

Elminia teresita (Zool. Rec. i. p. 78) is stated to be identical with *E. alexinæ*, Heugl. (J. f. O. 1864, pp. 255, 256), and only differs from the West-African *E. longicauda* by being smaller and having conspicuous black lores. T. von Heuglin, J. f. O. 1867, p. 203.

Tchitrea corvina is a new species from Praslin in the Seychelles, the adult male entirely black with very long middle rectrices, the female and young male with the head steely-black, the body chestnut above, white beneath, and the remiges dusky with chestnut outer edges. E. Newton, P. Z. S. 1867, p. 345; Ibis, 1867, p. 349, pl. iv. (♂ & ♀).

Philentoma unicolor is a new species from Borneo, resembling *P. velata*, but, except the white flank-feathers, wholly blue. E. Blyth, Ibis, 1865, p. 46.

Hylophorba ruticilla (Zool. Rec. ii. p. 109) is identical with *Calicalicus madagascariensis* (Linn.), and *Artamia rufa* (Gm.) is referred to the same genus. A. Grandidier, R. Z. 1867, pp. 386, 387.

Erythrosterna parva occurred in Scilly, November 1865. E. H. Rodd, Journ. R. Inst. Cornw. Oct. 1866, p. 151.

Newtonia brunneicauda (Zool. Rec. iii. p. 94) is figured. H. Schlegel & F. P. L. Pollen, Rech. Faun. Madag. pl. 18. fig. 3.

Muscicapa madagascariensis is described as a new species, but is subsequently said not to be so, though with what it is identical is not stated. A. Grandidier, R. Z. pp. 86, 255.

Mniotiltidæ.

Geothlypis rostratus is described as a new species from Nassau in the Bahamas, with a much stouter bill than *G. trichas*, the wing rounder, the tail much broader, and the whole bird much larger. Beneath also it is bright chrome-yellow. The heads of both species are figured. H. Bryant, Proc. Boston Soc. N. H. 1866, pp. 67, 68.

Dendræca gratiæ (Zool. Rec. ii. p. 111) is figured. D. G. Elliot, B. N. Am. part viii.

Cinclidæ.

Salvin, Osbert. On the genus *Cinclus*. Ibis, 1867, pp. 109–122, pl. ii., and pp. 382, 383.

A very philosophical monograph. The author admits geographical distribution as a secondary character in separating allied forms, but distinguishes between the relations which such forms

bear to each other, calling them "representative species" or "local races," according to the amount of variation. He recognizes 13 species in all, three of which are "local races" of *C. aquaticus* and three more of *C. pallasi*. Besides these there are four "representative species"—two of *C aquaticus*, one (sp. n.) of *C. mexicanus*, and one of *C. leuconotus*. *C. sordidus* stands alone. An excellent diagnostic and synonymatic list follows these remarks.

Cinclus aquaticus of Britain and Central Europe is distinct from *Sturnus cinclus*, Linn.,—this, which is the exclusively northern form, being *C. melanogaster*, and occurring occasionally in England and as far south further east as Erzeroom. *Id. ut suprà*, pp. 113–117. This last, however, breeds in the Pyrenees: H. B. Tristram, Ibis, 1867, pp. 466, 467.

C. ardesiacus is a new species from Veragua, allied to *C. mexicanus* but smaller, of a pale ash-colour, with a long bill and legs. O. Salvin, *ut suprà*, p. 121, pl. ii.

Turdidæ.

Wiese, —. Der Drosselfang. Journ. für Orn. 1867, pp. 70, 71.

No remarks of very general interest.

The specimen taken near Münster (Zool. Rec. iii. p. 94) and recorded as *Turdus atrigularis* proves to be *T. ruficollis*. B. Altum, J. f. O. 1867, pp. 109, 110.

Turdus merula, the first migration of the young is southward to meet the early fruit, they subsequently advance in a body northward, following the ripening berries. H. Blake-Knox, Zool. S. S. p. 684. Figured: J. Gould, B. Gr. Br. part xii.; E. Bettoni, Ucc. Lomb. tav. 14.

Turdus naumanni, Temm., is a variety of *T. iliacus*. C. F. Dubois, Arch. Cosmol. 1867, p. 128.

Turdus viscivorus is figured. E. Bettoni, Ucc. Lomb. tav. 19.

Turdus protomomelas is described as a new species from the Himalayas, allied to *T. chrysolaus* and *T. hortulorum*. The type is in the Berlin Museum. J. Cabanis, J. f. O. 1867, pp. 286, 287.

Turdus phæopygius, Cab. (Schomb., Reise Guian. iii. p. 666), juv., is described and figured. P. L. Sclater & O. Salvin, P. Z. S. 1867, p. 568, pl. xxix.

Hypsipetes crassirostris is a new species from the Seychelles, much like *H. olivaceus* of Mauritius, but with a stronger bill, and the throat, breast, and belly yellowish. E. Newton, P. Z. S. 1867, pp. 344, 345; Ibis, 1867, pp. 344, 345.

Hypsipetes nivpiceps (Zool. Rec. i. p. 80) has been sent from Northern China by Mgr. Perny. J. P. Verreaux, R. Z. 1867, p. 172.

Andropadus flaviventris is a new species from Zanzibar, very like *A. insularis* from Madagascar in colour, but considerably smaller. There are now eight species of the genus known. G. Hartlaub, P. Z. S. 1867, p. 825.

Crateropus acaciæ occurs in Tripoli. W. T. H. Chambers, Ibis, 1867, pp. 101, 104.

"*Pericrocotus andamanensis*, Tytler," is described as a new species from the Andamans, hitherto confounded with *P. brevirostris*; but it is apparently

smaller and has the scarlet plumage of *P. speciosus*. R. C. Beavan, Ibis, 1867, p. 322. Closely resembling *P. xanthogaster* (Raffles). Ld. Walden, *loc. cit.*

Mimus (*Leucomimus*) *polyglottus*, var. *bahamensis* *, is doubtfully described from Inagua in the Bahamas; but the differences are said to be very slight. H. Bryant, Proc. Bost. Soc. N. H. 1866, p. 68.

M. polyglottus, var. *dominicus*, is described from St. Domingo. *Id. tom. cit.* p. 93.

"*Mimus caruneulatus*" (Zool. Rec. iii. p. 93) is referred to the genus *Anthochæra*, and called *A. bulleri*. O. Finsch, J. f. O. 1867, pp. 342, 343.

Criniger tristis is a new species from Malacca, the size of *C. ruficaudatus* (sc. *phæocephalus*), but with a smaller bill. E. Blyth, Ibis, 1865, p. 47; O. Finsch, J. f. O. 1867, p. 18.

Finsch, Otto. Ueber die Arten und das Genus *Criniger*. Journ. für Orn. 1867, pp. 1–36.

An excellent monograph, and of great utility to the student of the group. The author recognizes 30 species and gives their diagnoses. Three are new :—

Criniger charlottæ [lege *carlottæ*] from Borneo and Sumatra, like *C. tristis*, Blyth (Ibis, 1865, p. 47), but with the tail whole-coloured. *Id. ut suprà*, pp. 10 and 19;

C. bemmeleni from Borneo, with loral streak and under parts yellowish-white, the rectrices with white tips on their inner webs. It is *Trichophororopsis typus*, Bp. C. R. 1854, p. 59. *Id. ut suprà*, pp. 11 and 29; and

C. chloris from Halmaheira, Batchian, and Morty, like *C. affinis*, Hombr. & Jacq., but having no yellow tip to the tail, and narrower loral streaks. It is *C. simplex*, Wallace (*nec* Temm.), Ibis, 1862, p. 320, and *C. flavicaudus*, G. R. Gray (*nec.* Bp.), P. Z. S. 1860, p. 351 : *Id. ut suprà*, pp. 12 and 36.

——. Nachtrag zur Monographie des Genus *Criniger*. *Tom. cit.* pp. 107, 108.

The author adds notices of two additional species to those included in the first paper.

Iole virescens, Blyth (J. A. S. B. xiv. p. 573), is to be called *I. viridescens*, since *Ixus virescens*, Temm., should be referred to *Iole*, and this name has priority. E. Blyth, Ibis, 1867, p. 7.

Cinclocerthia ruficauda, *C. macrorhyncha* (Zool. Rec. iii. p. 94), and *C. gutturalis* are figured. P. L. Sclater and O. Salvin, Ex. Orn. pls. 10–12.

Cichlopsis leucogenys (Zool. Rec. i. p. 79) is figured. *Iid. ut suprà*, pl. 19.

Myiadestes (Zool. Rec. iii. p. 89) *obscurus*, *M. unicolor*, *M. ralloides*, and *M. elisabethæ* are figured. *Iid. ut suprà*, pls. 25–28.

Petrocossyphus saxatilis, on changes in its plumage. A. von Pelikan, Sitzungsb. z.-b. Gesellsch. Wien, 1867, pp. 117, 118.

Sylviidæ.

Kurr, — von. Ueber die Abnahme der Singvögel im südwestlichen Deutschland. Württemberg. naturwiss. Jahreshefte, 1867, pp. 75, 76.

* Not to be mistaken for *Mimus* (*Scotiomimus*) *bahamensis*, Bryant, Proc. Boston Soc. N. H. vii. p. 114; Baird, Rev. Am. B. i. p. 52.

A few remarks on the destruction of singing-birds by the Italians, which helps to depopulate south-western Germany.

Saxicola leucopygia (A. E. Brehm) is *S. leucocephala* (A. E. Brehm) at a less advanced age, and *S. pallida*, Rüpp., is *S. monacha*, Rüpp., ♀. E. C. Taylor, Ibis, 1867, pp. 58, 59.

Saxicola erythropygia is the name proposed for a bird very like *S. philothamna*, Tristr., but having the rectrices white, broadly tipped with black, and the rump chestnut-red. *Id. ut suprà*, pp. 60, 61.

Saxicola and *Dromolæa*. Notes on the different species in Palestine. H. B. Tristram, Ibis, 1867, pp. 91–97.

Dromolæa nigra appears to be described as a new species from the Algerian Sahara. — Loche, Expl. scient. de l'Alg. Ois. i. pp. 200, 201.

Dromolæa albipileata is described as a new species from Dombe, West Africa; very like "*D. monticola*, Vieill.?" (of which a description is also given), but larger, with the whole head and nape pure white, a longer tail, and the external rectrix white on both sides. J. V. Barboza du Bocage, Jorn. Scienc. Lisboa, 1867, p. 151. Referred to *D. æquatorialis*, Hartl. (J. f. O. 1861, p. 112). *Id. tom. cit.* p. 338.

Rhodophila melanoleuca, Jerdon, is referred to the genus *Oreicola*, Bp.; and its specific name being already occupied there, it is proposed to be called *O. jerdoni*. E. Blyth, Ibis, 1867, p. 14.

Pratincola borbonica is described as a new species from Réunion. A. Grandidier, R. Z. 1867, pp. 88, 359. Identified with *Motacilla borbonica*, Bory de St. Vincent. H. Schlegel & F. Pollen, Rech. Faun. Madag. pp. 93, 94.

Ruticilla ——, specimens from Loando and Benguela are doubtfully described as belonging to a new species, but left unnamed. J. V. Barboza du Bocage, Jorn. Sc. Lisboa, 1867, p. 136. Referred to *Saxicola familiaris*, Bp.: *Id. tom. cit.* p. 338.

Cyanecula suecica (Zool. Rec. iii. p. 95) seen again in the Isle of Wight, 17th Sept. 1866. H. Hadfield, Zoologist, S. S. pp. 732, 733. Not again observed. *Id. tom. cit.* p. 821.

Luscinia philomela is figured. J. Gould, B. Gr. Br. part xi.

"*Tarsiger cucullatus*, Gould," is described as a new species. E. Blyth, Ibis, 1867, p. 16. Identified with *Pogonocichla stellata* (Vieill.) (*P. margarita*, Sundevall). G. R. Gray, *tom. cit.* p. 384.

"*Callene albiventris*, Fairbank," is a new species from the Pulney Hills in Southern India, similar in form to *C. ruficentris*, Blyth, but smaller and differing widely in colour, being much bluer above, with a distinct light blue, almost whitish, frontal band, and having no trace of the ferruginous abdomen. *C. frontalis* is larger still, with a longer tail, and has the frontal band darker blue and the abdomen grey. W. T. Blanford, P. Z. S. 1867, pp. 832–834, pl. xxxix.

Irania finoti (Zool. Rec. ii. p. 113) is said to be *Bessornis albigularis* ♀ (Zool. Rec. i. p. 80; iii. p. 95), of which species both sexes are figured. H. B. Tristram, Ibis, 1867, pp. 89–91, pl. i. [It is supposed also to be identical with *Cossypha gutturalis*, Guér. (R. Z. 1843, p. 162), Ferret & Galinier, Voy. Abyss. iii. pp. 201, 202; Atlas, Zool. pl. 5, from Abyssinia! T. Salvadori, Atti Accad. Sc. Torino, 1868, p. 285.]

Campicola livingstonii is a new species from the Zambesi, where it repre-

sents *C. pileata*, differing from it in being smaller, with less white on the forehead and black on the occiput, a darker back, and only a narrow gorget. H. B. Tristram, P. Z. S. 1867, pp. 887, 888.

Pycnoptilus floccosus (Zool. Rec. iii. p. 96) is not uncommon in the Yarra Mountains. F. M'Coy, Ann. & Mag. N. H. 3rd ser. xx. p. 177.

Gerygone personata (Zool. Rec. iii. p. 95) is figured. J. Gould, B. Austral Suppl. part iv.

Calamoherpe nigrifrons breeds near Naumburg. C. Jex, Zool. Garten, 1867, pp. 404, 405, and 482. *Id.* J. f. O. 1867, pp. 356–358.

Acrocephalus australis is figured. S. Diggles, Orn. Austral. part xiv.

Calamoherpe arundinacea (Gm.) is figured. E. Bettoni, Ucc. Lomb. tav. 10.

Cettia (*Potamodus*) *orientalis* is a new species from Palestine, very like *C. sericea*, but with a longer and broader bill, and the lower parts of an olive hue. H. B. Tristram, Ibis, 1867, p. 79.

Sylvia aquatica has occurred again in England. J. E. Harting, Zoologist, S. S. pp. 946, 947; Ibis, 1867, pp. 468, 469.

"*Suya gangetica*, Jerdon," is a new species from the Upper Ganges. E. Blyth, Ibis, 1867, p. 23.

"*Franklinia cleghornie*, Jerdon," is described from the district north-west of Delhi as a race of *F. buchanani*, differing in having the upper parts pale rufescent-brown, deepening on the crown. E. Blyth, Ibis, 1867, p. 24.

Ellisia lantzi and *E. chloropetoides* are described as new species from Madagascar. A. Grandidier, R. Z. 1867, pp. 86, 256. The last is subsequently referred to the genus *Prinia*.

"*Orthotomus salvadoræ*, P. Würt." (Naumannia, 1857, p. 433), is described. It is referred to *Camaroptera* and is a good species. T. v. Heuglin, J. f. O. 1867, p. 296.

Dumeticola brunneipectus is described as a new species, probably from the Himalaya, allied to *D. affinis* (Hodgs.), but with less broad white tips to the lower tail-coverts. E. Blyth, Ibis, 1867, pp. 19, 20.

Sylvia concolor, d'Orb., is referred to *Tanagridæ* and made the type of a new genus, *Xenospingus*. J. Cabanis, J. f. O. 1867, pp. 347–349.

"*Sylvia sordida*, P. Würt." (Naumannia, 1857, p. 433), is described. It is a *Curruca*, plainly distinct from *C. lugens*, Rüpp. (Wirbelth. taf. 42. fig. 2). T. v. Heuglin, J. f. O. 1867, pp. 294, 295.

Sylvia bowmanni is a new species from Palestine, very like *S. melanocephala*, but of a lighter build, with the black cap better defined, and the upper parts pale ash-colour. H. B. Tristram, Ibis, 1867, p. 85.

"*Eremomela parvula*, P. Würt." (Naumannia, 1857, p. 433), is an *Ægithalus*, and probably *Æ. punctatus*, Sundev. T. v. Heuglin, J. f. O. 1867, p. 300.

Drymœca cinerascens is an undescribed species from Sennaar and Keren. T. v. Heuglin, J. f. O. 1867, pp. 296, 297.

Drymœca eremita is a new species, from Palestine, most nearly allied to *D. striaticeps*, Tristr. (Ibis, 1859, p. 58), from the Sahara, but having the dark striæ on the head and neck extending further down, a distinct white eyebrow, the throat and breast striated with black, and the flanks of a deeper russet. H. B. Tristram, Ibis, 1867, p. 76.

"*Drymœca* ——?" Antinori (Cat. Ucc. Affr. centr. p. 37), is very like *D.*

ruficeps, and has been named [*ubi?*] by Dr. Salvadori "*D. antinorii*." T. v. Heuglin, J. f. O. 1867, p. 202.

Drymœca (?) *troglodytes* (Zool. Rec. i. p. 81) is *D. ferruginea*, Heuglin. *Id. loc. cit.*

Eremomela (?) *canescens* (Zool. Rec. i. p. 81) is *E. elegans*, Heuglin. *Id. loc. cit.*

Eroessa tenella (Zool. Rec. iii. p. 96) is figured. H. Schlegel & F. P. L. ollen, Rech. Faun. Madag. p. 92, pl. 18, fig. 2.

Abrornis maculipennis is described as a new species from Nepaul or Sikhim, allied to *A. superciliaris*, Tickell, but with two distinct yellowish-white wing-bands and an oval spot at the tip of the outer web of each tertial. E. Blyth, Ibis, 1867, p. 27.

Regulus cristatus and *R. ignicapillus* in captivity. — Hahn, J. f. O. 1867, pp. 211–214.

Motacillidæ.

"*Motacilla leucomelana*, P. Würt." (Naumannia, 1857, p. 433), is a deeply coloured old male of *M. capensis*. T. v. Heuglin, J. f. O. 1867, p. 207.

Motacilla yarrelli (♂, ♀, and juv.) and *M. alba* are figured. J. Gould, B. Gr. Br. part xii.

Anthus calthropæ is described as a new species from a living bird in the author's possession at Cape Town. E. L. Layard, B. S. Afr. pp. 121, 122.

Anthus rosaceus, Hodgson, from the Himalaya, with yellow primaries, is distinct from *A. cervinus* (Pall.), which probably does not occur in India. E. Blyth, Ibis, 1867, p. 32, note.

Anthus australis, *Cinclorhamphus cantillans*, and *C. rufescens* are figured. S. Diggles, Orn. Austral. part xii.

Anthus obscurus and *A. spinoletta* (Zool. Rec. ii. p. 115) are figured, J. Gould, B. Gr. Br. part xi.; also *A. richardi*, *Id. op. cit.* part xii.

Troglodytidæ.

Cyphorhinus lawrencii (Zool. Rec. i. p. 81), *C. phæocephalus*, *Troglodytes solstitialis*, and *T. brunneicollis* are figured. P. L. Sclater & O. Salvin, Ex. Orn. pls. 21–23.

Certhiidæ.

Gould, John. On the Australian Genus *Climacteris*, with a Description of a New Species. Proc. Zool. Soc. 1867, pp. 975–977.

The group is structurally as distinct from *Certhia* as from *Sitta*; but the reasons for this opinion are not stated. The new species, making the seventh known, is called

Climacteris pyrrhonota. It generally resembles *C. leucophæa* ♀, except in the rust-red of the lower part of the back, rump, and upper tail-coverts. J. Gould, *ut suprà*.

Xenicus gilviventris is described as a new species from New Zealand. A. v. Pelzeln, Verh. zool.-bot. Gesellsch. Wien, 1867, p. 316.

Sittidæ.

Sitta europæa is figured. E. Bettoni, Ucc. Lomb. tav. 7.

PARIDÆ.

Parus cæruleus, a variety of a uniform yellow killed in Scotland. J. A. Smith, Proc. R. Phys. Soc. Edinb. iii. pp. 207, 208.

Parus major and *P. cristatus* are figured. J. Gould, B. Gr. Br. parts xi., xii. The former also, E. Bettoni, Ucc. Lomb. tav. 22.

Lophophanes inornatus is figured. D. G. Elliot, B. N. Am. part v.

"*Penthestes melanoleucus*, P. Würt." (Naumannia, 1857, p. 433), is *Parus leucopterus*, Swains., with which also *P. leucomelas*, Rüpp. (N. Wirbelth. taf. 37. fig. 2), is identical. T. v. Heuglin, J. f. O. 1867, p. 295.

Melaniparus dorsatus (Rüpp. Syst. Uebers. p. 42, taf. 18) is identical with *Parus leuconotus*, Guér.-Ménev. (R. Z. 1843, p. 162). *Id. tom. cit.* p. 297.

Mecistura caudata is figured. E. Bettoni, Ucc. Lomb. tav. 12.

MALURIDÆ.

Sphenura broadbenti is described as "a new species" from Victoria, easily distinguished from the two known ones by the greater length of the wing, tarsus, and bill, as well as the rufous head and ears and the greyish-white over the front of the eye. F. M'Coy, Ann. & Mag. N. H. 3rd ser. xix. p. 185 (March 1867). It was exhibited as "a new species:" *Id.* Trans. & Proc. R. S. Victoria, viii. part i. p. 41 (May 1867); Ann. & Mag. N. H. 3rd ser. xx. p. 177. Figured, J. Gould, B. Austral. Suppl. part. iv.

Sphenœacus galactodes and *S. gramineus* are figured. S. Diggles, Orn. Austral. part xiii.

Atrichia rufescens (Zool. Rec. iii. p. 97) is figured. J. Gould, B. Austral. Suppl. part iv.

Malurus callainus is a new species from South Australia, closely allied to *M. melanonotus* and *M. splendens*. J. Gould, P. Z. S. 1867, pp. 302, 303. Figured. *Id.* B. Austral. Suppl. part iv.

Malurus hypoleucus is a new species, probably from Cape York, easily distinguished from every known one by the uniform dull blue of the whole upper and the equally uniform light hue of the lower surface. *Id.* Ann. & Mag. N. H. 3rd ser. xix. p. 369. Figured. *Id.* B. Austral. Suppl. part iv.

Malurus leuconotus is figured. *Id.* B. Austral. Suppl. part iv.

TANAGRIDÆ.

Euphonia rufiventer (Zool. Rec. iii. p. 98) is identical with *E. anneæ* (*Op. cit.* ii. p. 117). The last name has priority. O. Salvin, P. Z. S. 1867, p. 137.

Euphonia purpurea is a new species, from an unknown locality in South America. It comes nearest to *E. violacea*, but is smaller, and the upper plumage is entirely of a violet-purple. G. N. Lawrence, Ann. Lyc. N. York, 1867, pp. 466, 467.

Tanagrella dubusi, from Ecuador, is described and figured as a new species. C. F. Dubois, Arch. Cosmol. 1867, p. 118, pl. vii. [Identical with *Chlorochrysa calliparia* (Tsch.). P. L. Sclater, Ibis, 1868, pp. 112, 113.]

Phœnicothraupis vinacea is described as a new species from New Granada, probably most nearly resembling *P. rubica*; but its deep and nearly uniform vinaceous colour will distinguish it from all the rest. G. N. Lawrence, Proc. Acad. Philad. 1867, p. 94.

Lanio aurantius and *L. leucothorax* are figured. P. L. Sclater & O. Salvin, Ex. Orn. pls. 31, 32.

Tachyphonus rubrifrons (Zool. Rec. ii. p. 117) is proposed to be called *T. propinquus*, it being discovered that the red on the forehead of the type was due to a stain. G. N. Lawrence, Proc. Acad. Philad. 1867, p. 94.

Buarremon mesoxanthus, O. Salvin (P. Z. S. 1866, p. 72), is identical with *B. crassirostris* (Zool. Rec. ii. p. 117). The last name has priority, and the species is figured under it. O. Salvin, P. Z. S. 1867, p. 140, pl. xiv.

Buarremon flavovirens is a new species from Ecuador, differing from all others of the genus in its almost entire uniformity of colour. G. N. Lawrence, Ann. Lyc. N. York, 1867, p. 467.

"*Saltator plumbiceps*, Baird," is a new species from Mazatlan, and the most northern representative of the genus known. It approaches *S. rufiventris*, Vig. (*S. vigorsi*, Gray), but is lighter beneath, the abdomen and crissum not being rufous, and the superciliary streak extending beyond the eye. It has also some resemblance to *S. grandis*, but is much paler beneath, the head lighter, and the black throat-stripe narrow, with a small line above it. G. N. Lawrence, Ann. Lyc. N. York, 1867, pp. 477, 478.

Sylvia concolor, d'Orb., is referred to the Pityline group of Tanagers, and made the type of a new genus, *Xenospingus*, the precise characters of which, however, are not laid down. J. Cabanis, J. f. O. 1867, pp. 347-349.

Pitylus (*Caryothraustes*) *humeralis* is a new species from Bogota, not resembling any other in the distribution of its colours, but in dimensions much like *P. poliogaster*, though the bill is a trifle smaller. G. N. Lawrence, Ann. Lyc. N. York, 1867, pp. 467, 468.

Ploceidæ.

"*Loxia africana*, P. Würt." (Naumannia, 1857, p. 433), seems to be the young of *Quelea orientalis*, a conspecies of *Q. sanguinirostris*. T. v. Heuglin, J. f. O. 1867, pp. 297, 299, 391, 392.

"*Ploceus solitarius*, *P. hæmatocephalus*, *P. melanocephalus*, and *P. flavomarginatus*, P. Würt." (Naumannia, 1857, p. 433), are respectively *P. textor* (♀ or in winter dress), *Sycobius melanotis*, *Hyphantornis axillaris*, and *P. vitellinus* (in winter). *Id. tom. cit.* pp. 297–299. The third of these, *H. axillaris*, was in 1865 described as "*Ploceus* ——" (Zool. Rec. ii. p. 118). The specific name under which it appears in the Duke's list having been already bestowed on one of the genus, a new one is now given to it. *Id. tom. cit.* p. 298.

Ploceus pyrrhocephalus, Heugl. (J. f. O. 1864, p. 247), is *Sycobius melanotis*. *Id. tom. cit.* pp. 272, 273.

Euplectes pyrrhozona, Heugl. (J. f. O. 1864, p. 247), is *E. flammiceps*. *Id. tom. cit.* pp. 273, 274.

E. strictos, Heugl. (Sitz. k.-k. Akad. Wien, 1856, p. 291), is *E. habessinica*. *Id. tom. cit.* pp. 376, 377.

Ploceus affinis, Heugl. (Sitz. k.-k. Akad. Wien, 1856, p. 289), is *P. intermedius*, Rüpp. *Id. tom. cit.* pp. 383, 384.

P. aurantiiceps, Heugl. (Sitz. k.-k. Akad. Wien, 1856, p. 290), and *P. chrysopygus* (Zool. Rec. i. p. 84), are referred to *P. vitellinus*. *Id. tom. cit.* pp. 384, 385.

Ploceus sakalava certainly did come from Madagascar, and is quite different from *P.* (*Nelicurvius*) *pensilis*. G. Hartlaub, P. Z. S. 1867, p. 823.

Ploceus algondæ (Zool. Rec. iii. p. 99) is figured. H. Schlegel & F. P. L. Pollen, Rech. Faun. Madag. pl. 34. figs. 1, 2.

Textor castaneoauratus (Zool. Rec. i. p. 84) is possibly identical with *P. melanocephalus*, Pr. W. v. Würtemberg (Icon. pl. 43 *a*) (*qu. nomen ineditum*?). T. v. Heuglin, J. f. O. 1867, p. 205.

Hyphantornis baglefecht, Blyth (J. A. S. B. xxiv. 1856, p. 301), is called *H. somalensis*. T. v. Heuglin, J. f. O. 1867, pp. 379, 380.

Hyphantornis æthiops, from Abyssinia, in the Leyden Museum, is described as resembling *Ploceus larvatus*. *Id. tom. cit.* p. 380.

Habropyga rara (Zool. Rec. i. p. 84) is confounded with *Estrelda melanogastra*, Heuglin (J. f. O. 1863, p. 273). *Id. tom. cit.* p. 205.

Ploceus aurantius and *P. leucophthalmus*, Heugl. (Sitz. k.-k. Akad. Wien, 1856, p. 290), are referred to *Hyphantornis guerini*. *Id. tom. cit.* p. 388.

Hyphantornis concolor, from Nubia, in the Leyden Museum, is described as resembling *P. aurifrons*, but much smaller, and with trace of a dark spot before the eye. *Id. tom. cit.* p. 389.

H. chrysomelas, Heugl. (J. f. O. 1862, p. 25), is *H. personata* (Cassin). *Id. tom. cit.* p. 390.

Foudia sechellarum is a new species from Marianne in the Seychelles, dusky brown in winter plumage, with the forehead, occiput, and chin tinged with golden-yellow. The breeding-plumage of the male is unknown. E. Newton, P. Z. S. 1867, p. 346; Ibis, 1867, pp. 353, 354.

Foudia eminentissima, Bp. (Consp. Av. i. p. 446), from Zanzibar, is redescribed and figured from the original unique type. J. P. Verreaux, Bull. N. Arch. Mus. iii. pp. 7, 8, pl. 2. fig. 2.

Sycobius ——. An immature specimen, from Rio Quilo, Cabinda, of a supposed new species allied to *S. cristatus* is described. J. V. Barboza du Bocage, Jorn. Scienc. Lisboa, March 1867, p. 140.

Fringilla molybdocephala, Heugl. (Sitz. k.-k. Akad. Wien, 1856, p. 293), is "*Nigrita arnaudi*, Puch.," Bp. (Consp. Av. i. p. 444). T. v. Heuglin, J. f. O. 1867, p. 371.

Coliuspasser phœniceus, Heugl. (Sitz. k.-k. Akad. Wien, 1856, p. 291), is *Vidua axillaris*. *Id. tom. cit.* pp. 395, 396.

Munia kelaarti is the name given to the Cinghalese species, hitherto confounded with *M. pectoralis*. E. Blyth, Ibis, 1867, pp. 299, 300.

Fringillidæ.

"*Pheucticus tibialis*, Baird," is a new species from Costa Rica, bearing a general resemblance to *P. chrysogaster*, but with a shorter and stouter bill, the colour darker beneath, and the inner edge of the bend of the wing black; the tail is immaculate, and the only white on the wing is a spot at the base of the primaries. G. N. Lawrence, Ann. Lyc. N. York, 1867, pp. 478, 479.

Oryzoborus melas is a new species from Pebas in Eastern Peru, allied to *O. crassirostris*, but with a thinner bill, a wider white wing-spot, and the rump-feathers not marked inwardly with white. P. L. Sclater & O. Salvin, P. Z. S. 1867, pp. 979, 980.

"*Spermophila atriceps*, Baird," from Mazatlan, allied to *S. torqueola*, but with the lower part of the back olivaceous instead of black, and other distinguishing features. G. N. Lawrence, Ann. Lyc. N. York, 1867, pp. 479, 480.

Poospiza bonapartii is described and figured as a new species from Western Peru, like *P. torquata*, but having scarcely a tinge of red on the rump and the bill thicker, longer, and flesh-coloured at base. It may, however, possibly be identical with *P. dominicensis*, Bp. (Consp. Av. i. p. 473). P. L. Sclater, P. Z. S. 1867, p. 341, pl. xx.

Chlorospiza [?] *plumbea* and *Sycalis aureiventris* (Zool. Rec. ii. p. 118). A Spanish version of their descriptions. L. Landbeck, Anal. Univers. Chile, 1864, pp. 341–345.

Coturniculus mexicanus is described as a new species from Western Mexico. It is a northern form of *C. maninbe* and *C. peruanus*, in colour most resembling the former. G. N. Lawrence, Ann. Lyc. N. York, 1867, pp. 475, 476. [Probably identical with *Peucæa botteri*, Sclat. (P. Z. S. 1857, p. 214). O. Salvin, Ibis, 1868, p. 115.]

"*Pyrgisoma xantusi*, Baird," is described as a new species from Western Mexico, very similar in size and appearance to *P. biarcuatum*, but without the white crescent on the side of the neck, and having the cheeks olive. Notes on the species last named and also *P. kieneri* are added. G. N. Lawrence, Ann. Lyc. N. York, 1867, pp. 480, 481. [*P. xantusi* is apparently identical with *Melozone rubricata* (Cab., Mus. Hein. i. p. 140). O. Salvin, Ibis, 1868, p. 115.]

Passerculus guttatus is a new species from Lower California, resembling *P. rostratus* in the size and form of the bill, but it is very much darker above, and differs from all its allies in the obscure greyish colouring of this part, and in being more closely spotted beneath. G. N. Lawrence, Ann. Lyc. N. York, 1867, p. 473.

Passerculus alaudinus is figured. D. G. Elliot, B. N. Am. part iii.

Zonotrichia boucardi is a new species from Mexico, much allied to *Peucæa*, in which genus it might perhaps be placed. The colours of the head and upper back much resemble those of *P. æstivalis*; but the red markings are rather brighter. P. L. Sclater, P. Z. S. 1867, pp. 1, 2, pl. i.

Zonotrichia melanotis is described as a new and well-marked species from Western Mexico, with a large bill, and readily known by the four strongly defined black stripes on the head, separated by three greyish-white ones. G. N. Lawrence, Ann. Lyc. N. York, 1867, pp. 473, 474. [Possibly the same as *Hæmophila humeralis*, Cab. (Mus. Hein. i. p. 132). O. Salvin, Ibis, 1868, p. 115.]

Zonotrichia belli is figured. D. G. Elliot, B. N. Am. part vi.

"*Pyrgita fazoglensis*, *P. cahirina*, and *P. pectoralis*, P. Würt." (Naumannia, 1857, p. 433), are referred, the first to *Xanthodira dentata*, Sundev., the second and last to local races of *P. domestica*. *P. crassirostris*, from the Duke Paul's collection, is a large deeply coloured *P. swainsoni*. T. v. Heuglin, J. f. O. 1867, p. 299.

Pyrgita montana and *Passer italiæ* are figured. E. Bettoni, tavv. 9, 13.

Passer canicapillus is, with doubt, described as a new species from South-eastern Asia, of the size and proportions of *P. flavicollis*, but with a grey cap and rufous-brown supercilia. E. Blyth, Ibis, 1865, p. 46.

Montifringilla adamsi is figured. J. Gould, B. As. part xix.

Fringilla moreleti is identical with *F. tintillon*. J. V. Barboza du Bocage, Jorn. Sc. Lisboa, 1866, p. 92.

Fringilla cœlebs and *Chlorospiza chloris* are figured. E. Bettoni, Ucc. Lomb. tavv. 11, 21.

Pyrrhula murina (*cf.* Zool. Rec. iii. p. 99), its distinctness from *P. coccinea* impugned. J. V. Barboza du Bocage, Jorn. Sc. Lisboa, 1866, p. 92. [*Cf.* Ibis, 1868, p. 344.]

Pyrrhula vulgaris is figured. J. Gould, B. Gr. Br. part xi.

Pyrrhula erythrina, notes on its habits. — Huene, J. f. O. 1867, pp. 235–237.

Pinicola enucleator is figured. J. Gould, B. Gr. Br. part xii.

Pyrenestes melanotus, Heugl. (J. f. O. 1863, pp. 21, 163), is *P. frontalis*. T. v. Heuglin, J. f. O. 1867, p. 365.

Loxia curvirostra is exonerated from the charge of damaging the shoots of fir-trees. A. Röse, Zoolog. Garten, 1867, pp. 12–17, 476–480; A. Hellmann, *tom. cit.* pp. 350, 351.

Chrysomitris (*Loximitris*) *dominicensis* is a new species from Western St. Domingo, normal as far as colour goes, but in form of the bill (which with that of *C. notata* is figured) approaching *Loxia* (!). A. Bryant, Proc. Boston Soc. N. H. 1866, pp. 93, 94.

Chrysomitris spinus is figured. J. Gould, B. Gr. Br. part xii.

Ægiothus exilipes is figured. D. G. Elliot, B. N. Am. part iii.

Serinus luteolus is stated to be extending its range in Germany towards the north. A. v. Homeyer, J. f. O. 1867, p. 287.

"*Serinus flavifrons*, P. Würt." (Naumannia, 1857, p. 433), is *Crithagra personata*, Swains. T. v. Heuglin, J. f. O. 1867, p. 297.

Amandina optata is a new species from the Navigator's Islands, greatly resembling the Australian *A. temporalis*, but differing in the pale colour of the chin, throat, and sides of the head. O. Finsch & G. Hartlaub, Beitr. Faun. Centralpolyn. p. 102, taf. x. fig. 1.

Erythrura cyanovirens is figured. *Id. ut suprà*, taf. ix. fig. 3.

Emberizidæ.

"*Emberiza xanthogastra*, P. Würt." (Naumannia, 1857, p. 433), is supposed to be a highly coloured *Fringillaria flavigaster* (Rüpp. Atl. taf. 25). T. v. Heuglin, J. f. O. 1867, p. 297.

Emberiza passerina, notes on. J. Vian, R. Z. 1867, pp. 199–206.

Emberiza gigliolii is a new species from China, hitherto confounded (P. Z. S. 1863, p. 300) with *E. ciopsis*, Bp. R. Swinhoe, Ibis, 1867, pp. 393, 394.

Emberiza citrinella is figured. E. Bettoni, Ucc. Lomb. tav. 23.

Emberiza pusilla is figured. J. Gould, B. As. part xix.

Centrophanes lapponica (♂, ♀, & juv.) is figured. *Id.* B. Gr. Br. part xii.

Pipilo albigula is figured. D. G. Elliot, B. N. Am. part iv.

Alaudidæ.

Calandrella ——. An unnamed species, resembling *C. brachydactyla*, but smaller, with a shorter tail and stouter bill, is recorded from Benguela. J. V. Barboza du Bocage, Jorn. Scienc. Lisboa, March 1867, p. 152.

Mirafra horsfieldi is figured. S. Diggles, Orn. Austral. part xiv.

Alauda arborea, unusually abundant in England in 1867. T. E. Gunn, Zool. S. S. p. 634; Lord Clifton, *tom. cit.* p. 705; H. Stevenson, *tom. cit.* p. 729; W. Jeffery, *tom. cit.* p. 756; F. Bond and E. Newman, *tom. cit.* p. 792.

"*Melanocorypha maxima*, Gould," is mentioned as a new species from Affghanistan, with a remarkably slender bill. E. Blyth, Ibis, 1867, p. 46, note. Figured. J. Gould, B. As. part xix.

Pyrrhulauda affinis and *P. sincipitalis* are two new species—the first from Madras, very like the Nubian *P. cruciata*, but with a black crown, a broad white forehead, and a smaller black nape-spot; the second from Aden, like *P. grisea*, but with the crown and nape sooty-black, and two white sincipital spots. E. Blyth, Ibis, 1867, p. 185.

Icteridæ.

Cassin, John. A third study of the *Icteridæ*. Proc. Acad. Philad. 1867, pp. 45–74.

The first and second papers on this group were recorded by us last year (p. 101). This one, which is very elaborate, treats of the *Icterinæ*, including the genera *Icterus*, with five divisions (*Icterus* proper, *Euopsar*, *Andriopsar*, *Ateleopsar*, and *Cassiculoides*), *Pendulinus*, also with five divisions (*Bananivorus*, *Poliopsar*, *Melanopsar*, *Icterioides*, and *Pendulinus* proper), *Hyphantes*, with three divisions (*Hyphantes* proper, *Melanophantes*, and *Aporophantes*), *Cassicus*, with five divisions (*Cassicus*, *Cassiculus*, *Ostinops*, *Ocyalus*, and *Clypicterus*), and *Amblycercus*. Five species are described as new.

Icterus graysoni is a new species from the Tres Marias Islands, west coast of Mexico, resembling *I. pustulatus*, but larger, and with few or no spots on the back. *Idem, ut suprà*, pp. 48, 49.

Icterus (*Euopsar*) *sclateri* is a new species from Nicaragua and Guatemala, resembling *I. pustulatus*, but somewhat larger, of a rather pale orange-yellow, with the back black, and less white on the wings. It also somewhat resembles *I. gularis*, but is much smaller. It is "*I. mentalis*, Less.," Sclat. Cat. A. B. p. 134. *Idem, ut suprà*, p. 49.

Icterus (*Andriopsar*) *salvini* is a new species from Costa Rica, Nicaragua, and New Granada, very like *I. mesomelas*, but larger, and has the wing entirely black, or narrowly edged on the primaries only. *Idem, ut suprà*, pp. 51, 52.

Icterus (*Andriopsar*) *grace-annæ* [!] is a new species, probably from Peru, about the size of *I. xanthornis*, but in colour much resembling *I. mesomelas*. *Idem, ut suprà*, p. 52.

Cassicus melanurus is a new species, resembling *C. persicus*, but with the tail and under tail-coverts entirely black, and founded on a specimen in the Massena collection (now at Philadelphia) labelled "Guayaquil." *Idem, ut suprà*, p. 66.

Icterus pustulatus is figured. P. L. Sclater & O. Salvin, Ex. Orn. pl. 24.

Sturnidæ.

Calornis kittlitzi is a new species, from Oualan in the Caroline Islands, most resembling *Lamprotornis corvina*, Kittlitz, but easily distinguishable by its shorter and, at the base, thicker bill. It is *L. columbina*, Kittl. (Kupfert. ii. p. 11, pl. 15. fig. 2) (*nec* Gmel.) and *C. opaca* (pt.), G. R. Gray (B. Trop. Isl. Pacif. p. 26). O. Finsch & G. Hartlaub, Beitr. Faun. Centralpolyn. p. 109.

Aplonis tabuensis (Gmel.) and *A. brevirostris*, Peale, are figured. *Iid. ut suprà*, Taf. x. figg. 2, 3.

Acridotheres tristis, on its utility in the destruction of Locusts. A. Vinson, Bull. Soc. Imp. d'Acclimat. 1867, pp. 181–189; A. Grandidier, *tom. cit.* pp. 440, 441.

"*Temenuchus andamanensis*, Tytler," is described as a new species, from the Anadamans, hitherto taken for *Sturnia erythropygia*; but it wants the red rump. R. C. Beavan, Ibis, 1867, pp. 329, 330.

"*Eulabes andamanensis*, Tytler," from the Andamans, differs from *E. religiosa* in having a stouter bill, and wanting the divisions in the occipital caruncles. R. C. Beavan, Ibis, 1867, p. 331. Decidedly distinct from *E. intermedia* and *E. javensis*, but possibly identical with *Gracula dubia*, Schl. (N. T. D. 1863, p. 7). Lord Walden, *loc. cit.*

Ptilorhynchus ravensleyi is described and figured as a new species from Queensland, resembling both *P. holosericeus and Sericulus chrysocephalus* (sc. *melinus*). Indeed the author is doubtful to which of these genera it should be referred. S. Diggles, Orn. Austral. pt. xv.

Eight species of this family, referred to the genera *Sericulus* and *Ptilorhynchus*, are represented by 36 specimens in the Leyden Museum. H. Schlegel, Mus. P.-B., *Coraces*, pp. 98, 99, 117–120.

Sericulus melinus builds a "bower." E. P. Ramsay, Ibis, 1867, pp. 456, 457.

Sericulus chrysocephalus ♂ and ♀, with "bower," are figured. S. Diggles, Orn. Austral. parts xii. and xiii.

Chlamydera guttata is figured. J. Gould, B. Austral. Suppl. part iv.

"*Juida phœnicophæa*, P. Würt." (Naumannia, 1857, p. 432), is *Lamprotornis purpuroptera*, Rüpp. (Syst. Uebers. p. 64, taf. 25), as is also *L. æneocephalus*, Heugl. (Sitz. k.-k. Akad. Wien, 1856, p. 36). T. v. Heuglin, J. f. O. 1867, p. 294.

"*Lamprotornis guttatus*, *L. argyrophthalmus*, and *L. cinereiceps*, P. Würt." (Naumannia, 1857, pp. 432, 433), are respectively *L. chalybeius*, Ehr., *L. cyanogenys*, Sundev., and *Notauges chrysogaster*, juv. *Id. loc. cit.*

Lamprotornis purpureus is described as a new species from Mossamedes, very distinct from any other of the genus. J. V. Barboza du Bocage, Jorn. Sc. Lisboa, 1867, p. 334.

Paradiseidæ.

Fourteen species of this family, referred to the genera *Paradisea* and *Epimachus*, are represented by 201 mounted specimens in the Leyden Museum. Of *P. apoda* there are 45 examples, *P. regia* 38, *P.* (*Semioptera*) *wallacii* 25! H. Schlegel, Mus. P.-B. *Coraces*, pp. 79–98, and 149.

Paradisea apoda; notes on its habits. H. von Rosenberg, Natuurk. Tijdschr. Nederl. Ind. xxix. (1866) pp. 137–142.

Corvidæ.

Schlegel, H. Muséum d'Histoire Naturelle des Pays-Bas. 9me Livraison. Coraces. Leyde: 1867. Royal 8vo, pp. 1–149.

The author in this portion of his Catalogue groups together a most heterogeneous assemblage of birds, *Corvidæ*, *Paradiseidæ*, *Oriolidæ*, *Sturnidæ*, but, worst of all, *Coraciidæ*, so that it is almost impossible to give here a clear account of them. The *Corvidæ*, in which we include the author's genera *Corvus*, *Nucifraga*, *Pica*, *Cyanocorax*, *Picathartes*, *Pyrrhocorax*, *Garrulus*, *Cissa*, *Glaucopis*, *Chalybæus*, *Cracticus*, and *Lycocorax*, appear to be represented in the Leyden Museum by 685 mounted specimens, belonging to 116 species (besides a single cranium belonging to another); but this number would doubtless be greatly enlarged by naturalists holding other views than those of Prof. Schlegel. (*Cf.* Ibis, 1867, p. 111.)

Corvus coronoides, the two races (or species confounded under this name) (Zool. Rec. ii. p. 121) remarked upon. E. Blyth, P. Z. S. 1867, pp. 565, 566.

Corvus corax is figured. J. Gould, B. Gr. Br. part xii.

Garrulus glandarius is figured. E. Bettoni, Ucc. Lomb. tav. 24.

Cyanua macrolopha is figured. D. G. Elliot, B. N. Am. part iv.

Pica ——. A living bird, *with a yellow bill*, observed in Scotland. J. A. H. Brown, Zool. S. S. pp. 706, 707; A. Newton, *tom. cit.* p. 757. Supposed to be *P. nuttalli* [?]: E. Newman, *loc. cit.* and p. 913. Objection to this supposition: R. G. Beckwith, *tom. cit.* pp. 826, 827; J. A. H. Brown, *tom. cit.* pp. 877, 878; A. Newton, p. 913. A similar bird observed in Devonshire: G. F. Matthew, *tom. cit.* p. 1016.

Dendrocitta himalayensis is separated from *D. sinensis*, which has a comparatively short tail, and the middle rectrices black throughout; the wing-feathers have bright, glossy margins, and the wing-spot is much less developed. It is a common Himalayan bird. E. Blyth, Ibis, 1865, pp. 45, 46; *Id. op. cit.* 1867, p. 37.

Cyanocorax bellus is described. H. Schlegel, Mus. P.-B. *Coraces*, pp. 50, 51. [Identical with *Pica mystacalis*, Geoff. (Mag. Zool. 1835, pl. 34), and *C. uroleucus*, Heine (J. f. O. 1860, p. 115). P. L. Sclater, Ibis, 1868, p. 111.]

Garrulus brandti, Hartl. (R. Z. 1845, p. 52), from Japan, is figured. H. Whitely, jun., Ibis, 1867, p. 200, pl. iii.

Fregilus himalayanus and *Pyrrhocorax alpinus*, notes on. R. C. Beavan, Ibis, 1867, pp. 136–138, and 142.

Nucifraga caryocatactes. Pastor P. W. Theobald's description of its mode of breeding (*cf.* Zool. Rec. i. p. 64, ii. p. 121) and a figure of its egg. A. Newton, P. Z. S. 1867, pp. 162–164, pl. xv. fig. 2. Nest and eggs exhibited: Lord Lilford, *tom. cit.* p. 687.

Nucifraga immaculata is a name given to a new species (founded on one of Mr. Hodgson's drawings) wholly unspotted. E. Blyth, Ibis, 1867, p. 36.

Calleas olivascens is a new species from New Zealand, larger than *C. cinerea*, for which it was mistaken by the author (Reise Novara, Vögel, p. 86), and with the rictal caruncles darker. A. v. Pelzeln, Verhandl. zool.-bot. Gesellsch. 1867, p. 317, note; O. Finsch, J. f. O. 1867, p. 343.

COLUMBÆ.

COLUMBIDÆ.

TEGETMEIER, W. B. Pigeons, their Structure, Habits, and Varieties. London: 1867. 8vo.

The numerous domesticated races of *Columba livia* are very fully and scientifically treated, so that this work is a valuable aid to the professed ornithologist. [*Cf.* Zoologist, S. S. pp. 929–943.]

Chamæpelia anais (Less.) is probably identical with *Columba erythrothorax*, Meyen (Act. L.-C. xvi. Suppl. p. 98, tab. 16), and this last is the older name. P. L. Sclater & O. Salvin, P. Z. S. 1867, p. 989.

Leptoptila cassini is a new species, twice confounded (Proc. Acad. Philad. 1860, p. 195, and Ann. Lyc. New York, vii. p. 333) with *L. verreauxi*, from which it is very different in appearance, the former being very dark in colour, the latter very light. G. N. Lawrence, Proc. Acad. Philad. 1867, pp. 94, 95.

Scardafella inca is figured. D. G. Elliot, B. N. Am. part vi.

Geotrygon sylvatica; notes on its habits, with reference to the Columbine affinity of *Didus*. R. Hill, Proc. Acad. Philad. 1867, pp. 130, 131.

Ptilopus aurantiiventris is described as a new species from the Ké Islands. R. von Rosenberg, Natuurk. Tijdschr. Nederl. Ind. xxix. (1866) p. 144.

Ptilopus sganzini is figured. H. Schlegel & F. P. L. Pollen, Rech. Faun. Madag. pl. 37, figs. 1, 2.

Ptilopus, the species of this genus found in the Pacific Islands are the subject of some valuable remarks. O. Finsch & G. Hartlaub, Beitr. Faun. Centralpolyn. pp. 121–134.

P. cæsarinus (Zool. Rec. ii. p. 110) is *P. peroussii*, Peale, and is figured. *Iid. tom cit.* pp. 110-112, taf. xi. fig. 1.

Columba vitiensis, Quoy, is figured. *Iid. tom. cit.* taf. xi. fig. 2.

Columba polleni (Zool. Rec. ii. p. 122) is figured. H. Schlegel & F. P. L. Rech. Faun. Madag. pl. 37.

Columba malaccensis [*Geopelia striata*] was shot in September 1861, near Prague. E. Schauer, Sitzungsb. z.-b. Gesellsch. Wien, 1867, p. 40.

Carpophaga luctuosa and *C. leucomela*, their heads figured. S. Diggles, Orn. Austral. part xv.

Lophophaps leucogaster is described and figured as a new species nearly resembling *L. plumifera*, but larger and with a whiter head and brighter rayed markings above. J. Gould, B. Austral. Suppl. part iv.

Lophophaps ferruginea is figured. *Id. loc. cit.*

Treron nudifrons is described as a new species from Cabinda (West Africa), allied to *T. calva*. J. V. Barboza du Bocage, Jorn. Sc. Lisboa, 1867, p. 144.

Turturæna ——, a male example from St. Thomas's Isle (West Africa) is doubtfully described as a new species, but left unnamed. J. V. Barboza du Bocage, Jorn. Sc. Lisboa, 1867, pp. 144, 145. Referred to *Columba chlorophæa* (Zool. Rec. iii. p. 103). *Id. tom. cit.* p. 338.

"*Peristera parallinostigma*, P. Würt." (Naumannia, 1857, p. 434) is *P. afra*. T. v. Heuglin, J. f. O. 1867, p. 301.

Columba risoria (Zool. Rec. i. p. 87) should be admitted to the European Fauna. — Alléon, R. Z. 1867, pp. 5–7. [*Cf.* Ibis, 1868, pp. 222, 223.]

"*Turtur turturoides*, P. Würt." (Naumannia, 1857, p. 434) is *T. auritus*. T. V. Heuglin, J. f. O. 1867, p. 301.

Turtur rostratus, Bp. (Consp. Av. ii. p. 62), from Marianne in the Seychelles, differs in the form of the bill and wings from *T. picturatus* (Temm.). E. Newton, Ibis, 1867, pp. 354, 355, figs.

Streptopelia barbaru (Zool. Rec. i. p. 87 *) is identical with *S. vinacea*. T. V. Heuglin, J. f. O. 1867, p. 206.

Didunculidæ.

Didunculus strigirostris, the egg figured (*cf.* Zool. Rec. ii. p. 124). A. Newton, P. Z. S. 1867, p. 164, pl. xv. fig. 6. Head of immature bird, and egg (from description) figured. O. Finsch & G. Hartlaub, Beitr. Faun. Centralpolyn. pp. 150–152, tab. xi. fig. 3, and tab. iii. fig. 1.

Dididæ.

Didus (sp.). The picture mentioned last year (Zool. Rec. iii. pp. 106, 107) is supposed to represent the Didine bird of Bourbon. A. Newton, P. Z. S. 1867, pp. 179, 180.

Pezophaps solitaria, a large number of its bones obtained. E. Newton, Ibis, 1867, p. 146.

GALLINÆ.

Gray, G. R. List of the Specimens of Birds in the Collection of the British Museum. Part V. *Gallinæ*. London: 1867. 12mo, pp. 120.

How necessary this publication was may be judged from the fact that the same author's 'List' of 1844 shows that the Museum then contained 172 species, while the present includes 342, or almost exactly double! The various lists published by Mr. Gray are so well known that, though we have not before had occasion to notice one of them in the 'Record,' it would be useless to occupy space by dwelling on their many meritorious features. The present work has several advantages over its predecessors. Species introduced for the first time to notice are described to the number of 24; and the names of those of which the Museum does not contain specimens are also added, though in these cases references to the places where they may be found described are omitted—a fact much to be regretted. The new species belong to *Cracidæ* (7), *Phasianidæ* (3), *Tetraonidæ* (2), and *Tinamidæ* (12). The genera *Thinocorus*, *Attagis*, and *Chionis* are classed by Mr. Gray among the *Gallinæ*; but there is nothing new respecting them. [*Cf.* Ibis, 1868, p. 99.]

Cracidæ.

Chamæpetes unicolor is a new species from Veragua allied to *C. goudoti*, but much smaller, the body of one colour and that deeper in hue. The primaries in this genus are greatly excised, and on this structure depends the curious noise made by the birds. O. Salvin, P. Z. S. 1867, pp. 159, 160.

"*Penelope jacquini* (Reichenb.)" is described. G. R. Gray, List B. Br. Mus. *Gallinæ*, p. 8.

Ortalida superciliaris, *O. bronzina*, *O. plumbiceps*, *G. wagleri*, and *O. cinereiceps* are new species. The precise locality of the first is not stated; the

* *Errore* "*barbara*."

second is from Venezuela, and is like *O. canicollis*, Wagl., but of a lighter colour on the back; the third is from Honduras and Guatemala, the fourth from California and Mexico, and the fifth, which is like *O. garrula* (Humboldt), but has an ashy head with the abdomen and tips of the tail-feathers brownish-white, comes from the north-west coast of America. *Idem, ut suprà*, pp. 10–15.

Crax sclateri and *C. daubentoni* are new species: the first, which is from Mexico, may be the same as *C. sloanii*, Reichenb.; and the second, probably from Central America, is *C. globicera*, Temm., and possibly *C. aldrovandi*, Reichenb. *Idem, ut suprà*, pp. 14, 15.

Phasianidæ.

Gallus alector (*ferus*) is figured. C. J. Sundevall, Sv. Fogl. pl. lxxiii. fig. 1.

Phasianus versicolor, on its acclimatization. A. Touchard, Bull. Soc. Imp. d'Acclimat. 1867, pp. 55, 56.

Phasianus sæmmerringi and *P. scintillans* (Zool. Rec. iii. p. 107) are figured. J. Gould, B. As. part xix.

Thaumalea amherstiæ ♂ has been sent from Northern China by Mgr. Perny. J. P. Verreaux, R. Z. 1867, p. 173.

Lophophorus lhuysi (Zool. Rec. iii. p. 107) is described at some length. J. Verreaux, Bull. Soc. d'Acclim. 1867, pp. 706–709.

Crossoptilum auritum and its congeners (Zool. Rec. i. p. 88, ii. p. 125), notes on. F. Schlegel, Zool. Gart. 1867, pp. 474–476; (translated) Bull. Soc. d'Acclim. 1867, p. 780, with addition of note by A. Delondre. *C. auritum* (Pall.) is distinct from *C. tibetanum* and *C. mantchuricum*. G. R. Gray, List B. Br. Mus. *Gallinæ*, p. 31.

Ithaginis geoffroyi is a new species from Northern China. J. Verreaux, Bull. Soc. Imp. d'Acclim. 1867, pp. 709–711.

Polyplectrum cyclopsilum, *P. atelospilum*, and *P. enicospilum* (lege *henicospilum*) are described as new species, the first and last from North-eastern India, the second (of which the tail only is known) from the Loa Mountains. G. R. Gray, List B. Br. Mus. *Gallinæ*, pp. 23, 24.

Numida vulturina is common at Lamoo, on the coast of Zanzibar. J. Kirk, P. Z. S. 1867, p. 953.

Tetraonidæ.

Pternistes sclateri is described and figured as a new species from Mossamedes, smaller than *P. nudicollis* or *P. rubricollis*, and much resembling *P. humboldti* from Tete, but with the brown and white on each feather of the breast and belly reversed in position. J. V. Barboza du Bocage, Jorn. Sc. Lisboa, 1867, pp. 327, 328, est. vi.

Francolinus kirki is described as a new species, superficially resembling *F. pileatus*, but smaller and with arrow-shaped black spots on the upper tail-coverts, and apparently differently coloured beneath. G. Hartlaub, P. Z. S. 1867, p. 827.

Francolinus psilolæmus is a new species from Shoa, allied to *F. gutturalis*, but having a white throat with numerous black spots, one at the tip of each feather. G. R. Gray, List B. Br. Mus. *Gallinæ*, p. 50.

Francolinus rovuma is described as a new species. *Id. ut suprà*, p. 52. [Identified with *F. granti* (Zool. Rec. ii. p. 126). *Id.* Ibis, 1868, p. 90.]

Lagopus scoticus has been observed to perch on trees, and therefore another

supposed distinction between it and *L. albus* is removed. G. Norman, Zool. S. S. p. 607. Considered to be distinct. H. Doubleday, *tom. cit.* pp. 707, 708. Identity of their juvenile plumage. G. Norman, *tom. cit.* p. 758.

Tetrao brachydactylus, Temm., is identical with *T. albus*. J. Vian, R. Z. 1867, pp. 206, 207. (*Cf.* H. Schlegel, Rev. Crit. pp. 88, 89.)

Lagopus persicus (Zool. Rec. ii. p. 126) is admitted to be a variety of *L. scoticus*. G. R. Gray, List B. Br. Mus. *Gallinæ*, p. 91.

Lagopus reinhardti and *L. scoticus* are figured. C. J. Sundevall, Sv. Fogl. lxxiii. figs. 2, 3.

Tetrao urogallus, *T. tetrix*, *Bonasia sylvestris*, *Lagopus albus*, and *L. mutus*, with their various hybrids and varieties of plumage, are figured. L. Lloyd, Game Birds and Wild Fowl of Sweden and Norway.

Starna perdix is figured. E. Bettoni, Ucc. Lomb. tav. 8.

Malacoturnix is the name for a proposed new genus, of which the type, *Rollulus superciliosus*, J. E. Gray (Knowsley Menag. *Ares*, pl. xvi.), has recently occurred in India, but its characters are not defined. E. Blyth, P. Z. S. 1867 (May 9), pp. 474, 475. The generic name changed to *Malacortyx*, and the specific to *superciliaris*! *Id.* Ibis, 1867 (July), pp. 313, 314.

Coturnix pectoralis is figured. S. Diggles, Orn. Austral. part xv.

Excalfatoria chinensis and *E. minima* are figured. J. Gould, B. As. part xix.

Odontophorus leucolæmus is a new species from Veragua, easily distinguishable by its white throat and the hidden white spots on its black breast. O. Salvin, P. Z. S. 1867, p. 161.

Ortyx graysoni is a new species from Western Mexico resembling *O. pectoralis*, but larger and having no black before the eye and a narrow black collar below the white throat. G. N. Lawrence, Ann. Lyc. New York, 1867, pp. 476, 477.

Pteroclidæ.

Syrrhaptes paradoxus said to have occurred in Scotland May 13, 1863, a date some days earlier than hitherto believed to have been the case (*cf.* Ibis, 1864, pp. 200, 210). J. A. H. Brown, Zoologist, S. S. p. 898. Other notes of its occurrence in Scotland. J. A. Smith, Proc. R. Phys. Soc. Edinb. iii. pp. 178–181 and 207. Figured. J. Gould, B. As. part xix.; C. J. Sundevall, Sv. Fogl. pl. lxxiii. fig. 4.

Turnicidæ.

Pedionomus torquatus is figured. S. Diggles, Orn. Austral. part xv.

Megapodiidæ.

Megapodius senex and *M. eremita* are described as new species, the former from the Pelew and the latter from the Bougainville (Echiquier) Islands. G. Hartlaub, P. Z. S. 1867, pp. 830, 831.

Tinamidæ.

Tinamus guttulatus, *T. bonapartii*, *T. nigricapillus*, *T. radiatus*, *T. longirostris*, and *T. bimaculatus* are new species. The first, from Brazil, is like *T. suberistatus* in general appearance, the second is from the valley of Aragua, the third from Chili, the fourth from Bolivia, and of the fifth and sixth the localities are not precisely known. G. R. Gray, List B. Br. Mus. *Gallinæ*, pp. 97–101.

Rhynchotis maculicollis, *R. ornatus*, and *R. pentlandi* are new species from Bolivia; the first is of the size of *R. rufescens*. *Idem*, *ut suprà*, pp. 102, 103.

Rhynchotis rufescens, remarks on its breeding in captivity. A. D. Bartlett, P. Z. S. 1867, p. 687.

Nothura marmorata, *N. darwini*, and *N. assimilis* are new species: the first, from Bolivia, is of the size of *N. major*; the second, which is *N. minor*, Gould (*nec* Spix), is from Bahia Blanca, and of the size of *N. media*; the third is like *N. boraquira*, Spix, but pale chestnut on the back with fewer black markings. G. R. Gray, List B. Br. Mus. *Gallinæ*, pp. 104, 105.

Opisthocomidæ.

Opisthocomus cristatus, its egg figured. A. Newton, P. Z. S. 1867, p. 164, pl. xv. fig. 7. Its habits described: A. R. Wallace, P. Z. S. 1867, p. 585.

GRALLÆ.

Rallidæ.

Three species of this family, all referred to the genus *Heliornis*, Bonn. (*nec* Boie), are represented in the Leyden Museum by ten specimens, and placed in the same group as various very distantly related forms. H. Schlegel, Mus. P.-B. *Urinatores*, pp. 48–50. [See *Sphenisciдæ*.]

"*Gallinula aterrima*, P. Würt." (Naumannia, 1857, p. 434), with *Ortygometra erythropus*, Heugl. (Sitz. k.-k. Akad. Wien, 1856, p. 316), are referred to *G. flavirostris*, Swains. T. v. Heuglin, J. f. O. 1867, p. 303.

Gallinula pumila, Sclat. (Ibis, 1859, p. 249, pl. vii.), and *G. minor*, Hartl. (J. f. O. 1860, p. 341), are referred to *G. angulata*, Sundev. (Öf. k. V.-Ak. Förh. 1850, p. 110). O. Finsch & P. L. Sclater, Ibis, 1867, p. 254.

Corethrura elegans has occurred in Natal. *C. pulchra*, with which it has been identified by Prof. Schlegel (Mus. P.-B. *Ralli*, pp. 26, 27), differs from it in the white tear-spots of the upperside. O. Finsch, J. f. O. 1867, p. 249.

Porzana erythrops is figured and described as a new species from Lima, about the same size as *P. carolina*, but shorter and stouter. The wings are short and concave, and the feet are remarkably shorter and stouter than in any other Crake known to the author. [This last peculiarity is not apparent in the figure; but in the unique specimen the feet are not in a very good state.] It may possibly require a separate genus. P. L. Sclater, P. Z. S. 1867, pp. 343, 344, pl. xxi.

Porzana fasciata is an undescribed species from Eastern Peru, allied to *P. castanea*, but having a barred belly. P. L. Sclater & O. Salvin, *tom. cit.* p. 981.

Porzana rubra is figured. *Iid.* Ex. Orn. pl. 16.

Crex pratensis, supposed to hybernate. H. Blake-Knox, Zool. S. S. pp. 679, 680.

Milne-Edwards, Alphonse. Mémoire sur une espèce éteinte du genre *Fulica* qui habitait autrefois l'île Maurice. Ann. Sc. Nat. 5ᵉ sér. Zool. viii. pp. 194–220, pls. 10–13.

Together with the other birds' bones found in the Marc aux Songes at Mauritius (Zool. Rec. iii. pp. 75, 76, 104), were the pelvis, tibia, and tarso-metatarsus of a *Fulica*, obtained by Mr. Edward Newton, which the author, after careful examination, shows must have belonged to an extinct species of large size, and applies to it the name of *F. newtoni*. He also quotes passages from accounts of ancient voyages which may have reference to it. The specimens are beautifully and amply figured, representations of the corresponding parts of several other forms of *Rallidæ* being given for the sake of comparison.

Sclater, P. L. Note on the species of the genus *Tribonyx*. Ann. & Mag. Nat. Hist. 3rd ser. xx. pp. 122, 123.

Three species are distinguished: — (1) *T. mortieri*, Dubus, from Western Australia, of large size, the wings striated with white, and with a large white hypochondrial patch; (2) *T. gouldi*, Sclater (*T. mortieri*, Gould, *nec* Dubus), from Tasmania, of middle size, with unstriped wings, but a large white hypochondrial patch, and (3) *T. ventralis*, from Australia generally (?), the smallest with unstriped wings, and black flanks spotted with white. The true *T. mortieri* is figured, P. Z. S. 1867, pp. 816, 817.

Rallus hypoleucus is a new species from Tongatabu, founded on the "Philippine Rail, var. β," Latham (Synops. iii. p. 232), in Banks's collection, and apparently not seen since. O. Finsch & G. Hartlaub, Beitr. Faun. Centralpolyn. pp. 163, 164.

Rallina pœciloptera (Zool. Rec. iii. p. 108) is figured. O. Finsch & G. Hartlaub, Beitr. Faun. Centralpolyn. Taf. xii. fig. 1.

Notornis mantelli, Notes on. D. Mackay, Ibis, 1867, pp. 144, 145.

Porphyrio indicus and *P. vitiensis* are figured. O. Finsch & G. Hartlaub, Beitr. Faun. Centralpolyn. Taf. xii. figg. 2, 3.

Porphyrio, sp. ?, has occurred in Hampshire (*qu.* Zool. Rec. iii. p. 109 ?). F. A. Hawker, Zoologist, S. S. p. 829.

Aramides albiventris is described as a new species from British Honduras, differing from *A. cayennensis* in the paler breast and a white mark on the abdomen. G. N. Lawrence, Proc. Ac. Philad. 1867, p. 234.

Aramides zelebori (Zool. Rec. ii. p. 129) is possibly identical with "*Rallus rythirhynchus*, Vieill.", to which also *R. cæsius*, Tsch. (*nec* Spix), *R. sanguinolentus*, Swains., and *R. bicolor*, are referred; but it must be carefully distinguished from *R. nigricans*, Vieill. (*Gallinula cæsia*, Spix), with which it has been confounded. P. L. Sclater & O. Salvin, P. Z. S. 1867, p. 991. (*Cf. etiam tom. cit.* p. 333.)

Scolopacidæ.

Hoffmann, Julius. Die Waldschnepfe. Ein monographischer Beitrag zur Jagdzoologie. Stuttgart: 1867. 8vo, pp. 151.

A very carefully written monograph of *Scolopax rusticola*, with some remarks on *S. minor*. The curious property of the former being able to inflect the maxilla (*cf.* Zool. Rec. ii. p. 130)

seems to be well established. (*Cf.* J. f. O. 1867, pp. 110–112; Zoolog. Garten, 1867, pp. 445–448; Ibis, 1868, pp. 109, 110.)

Actiturus longicauda occurred in Cornwall in the autumn of 1865. E. H. Rodd, Journ. R. Inst. Cornw. Oct. 1866, p. 151. Also occurred in New South Wales in 1848, and is figured thence. J. Gould, B. Austral. Suppl. pt. iv.

Totanus glareola, a flock of from 80 to 100 seen in Kent. F. D. Power, Zoologist, S. S. p. 991.

Totanus fuscus (æst. & hyem.) is figured. J. Gould, B. Gr. Br. pt. xii.

Totanus hartetianus, *Elorius paludicola*, *Tringa gracilis*, and *Numenius antiquus* are figured. A. Milne-Edwards, Ois. Foss. Fr. pls. lxiii., lxiv.

"*Actitis minor*, P. Würt." (Naumannia, 1857, p. 434), is only *A. hypoleucus*. T. v. Heuglin, J. f. O, 1867, p. 303.

Limosa uropygialis is figured. O. Finsch & G. Hartlaub, Beitr. Faun. Centralpolyn. Taf. xiii. figg. 1, 2.

Numenius arcuatus, with a monstrous bill.—Schlotthauber, J. f. O. 1867 pp. 358–360.

Numenius microrhynchus (Zool. Rec. iii. p. 109) is probably referable to *N. borealis*, Forst. P. L. Sclater, P. Z. S. 1867, p. 333.

Numenius cassini is described as a new species from Middle China. It is smaller than *N. arcuatus*, and is probably "no. 29" of Mr. Cassin's list (*cf.* Ibis, 1863, p. 445). R. Swinhoe, Ibis, 1867, p. 398.

Pelidna cinclus (æst. & hyem.) and *Calidris arenaria* are figured. J. Gould, B. Gr. Br. pt. xi.

Macrorhamphus scolopaceus and *Ereunetes occidentalis* are figured. D. G. Elliot, B. N. Am. pts. v., vi.

Gurney jun., J. H. A summary of the Occurrences of the Grey Phalarope in Great Britain during the Autumn of 1866. London: 1867, pp. 24, with a map.

Phalaropus fulicarius was very abundant at the time mentioned (Zool. Rec. iii. p. 109); and the author has collected all the records of its occurrence. 20 August was the earliest, and 8 October the latest date on which the species was observed; and probably not less than 250 birds were killed, chiefly in the south of England. [*Cf.* Zoologist, S. S. pp. 917–919; Ibis, 1868, p. 101.]

Phalaropus hyperboreus has occurred in Holland, and a very complete account of it is given. J. P. van Wickevoort-Crommelin, Arch. Néerl. 1867, pp. 76–83.

Eggs of *Tryngites rufescens*, *Tringa minutilla*, *Phalaropus fulicarius* and *Totanus flavipes* are figured. A. Newton, P. Z. S. 1867, pp. 165, 166, pl. xv figg. 4, 3, 1 & 5.

Charadriidæ.

Chionis minor, its egg described, E. L. Layard, Ibis, 1867, pp. 458, 459. In confinement, P. L. Sclater, P. Z. S. 1867, p. 891.

Dromas ardeola breeding on the Dhalak Islands in the Red Sea. Is partially nocturnal in its habits. T. v. Heuglin, J. f. O. 1867, p. 285.

Œdicnemus grallarius (head) figured. S. Diggles, Orn. Austral. pt. xi.

Œdicnemus superciliaris is figured. P. L. Sclater & O. Salvin, Ex. Orn. pl. 30.

Himantopus leucocephalus, its eggs and plumage of the young described. E. P. Ramsay, P. Z. S. 1867, p. 600.

Recurvirostra sinensis is described as a new species from China. R. Swinhoe, Ibis, 1867, pp. 400–402. [Believed to be *R. avocetta*. H. B. Tristram, Ibis, 1868, p. 133.]

"*Charadrius sennaarensis* and *C. trochilus*, P. Würt." (Naumannia, 1857, p. 434), are referred to *C. pecuarius*. T. v. Heuglin, J. f. O. 1867, p. 303.

Ægialitis pecuarius (Temm. Pl. Col. 183) has been commonly confounded with *Æ. kittlitzi*, Reichenb. (Syn. Av. 1063). The former is the "Wire-bird" of St. Helena, and seems to be rare at the Cape. E. L. Layard, Ibis, 1867, pp. 248–252, and G. R. Gray, *loc. cit.*

Glareola pallasi [sc. *nordmanni*] is figured. A. Fritsch, Vög. Eur. tab. 33. figg. 9, 10.

Glareola orientalis and *G. grallaria* are figured. S. Diggles, Orn. Austral. pt. xiv.

Otididæ.

Otis tarda, notes on its habits in domestication. W. Hartmann, Zoolog. Garten, 1867, pp. 57–60. Seen in Norfolk, 7 January 1867. T. A. Rising, Zool. S. S. p. 635.

Otis australiana. A specimen examined had no gular pouch. E. P. Ramsay, Ibis, 1867, pp. 134, 135.

Otis arabs occurs on the north-west coast of Africa, not far from Mogador. C. F. Tyrwhitt Drake, Ibis, 1867, p. 420.

"*Eupodotis burchelli*, P. Würt." (Naumannia, 1857, p. 434), is described as being very like *E. ludwigi*, but much larger, and with a long ruff running down the base of the neck, as in *Otis houbara*. T. v. Heuglin, J. f. O. 1867, pp. 301, 302.

Gruidæ.

Anthropoides virgo. Notes on its occurrence in Shetland, 14 May, 1863. J. A. Smith, Proc. R. Phys. Soc. Edinb. iii. pp. 177, 178. Figured. C. J. Sundevall, Sv. Fogl. lxxvii. fig. 4.

Grus excelsa, *G. problematica*, and *G. primigenia* are figured. A. Milne-Edwards, Ois. Foss. Fr. pl. lxxv., lxxvi.

Psophiidæ.

Psophia, the peculiar distribution of the species of this genus (each of which seems to be separated by a river from its neighbours) explained. P. L. Sclater & O. Salvin, P. Z. S. 1867, p. 592.

Ardeidæ.

Ardea elegans (Zool. Rec. iii. p. 110) has nothing to do with *A. garzetta*, but belongs to the same group as *A. comata*. G. Hartlaub, P. Z. S. 1867, p. 823.

Ardea purpurea is figured. C. J. Sundevall, Sv. Fogl. lxxvii. fig. 1.

"*Ardea subralloides*, P. Würt." (Naumannia, 1857, p. 434), is *A. ralloides*. T. v. Heuglin, J. f. O. 1867, p. 303.

Herodias garzetta has occurred in Victoria. F. M'Coy, Proc. R. S. Vict. viii. p. 41; Ann. & Mag. N. H. 3rd ser. xx. p. 177.

"*Herodias andamanensis*, Tytler," is described as probably a new species from the Andamans, the young being black from the egg. R. C. Beavan, Ibis, 1867, p. 333.

Nyctiardea gardeni, notes on a colony of this species since wantonly destroyed. W. E. Endicott, Am. Nat. 1867, pp. 343–345.

Ciconiidæ.

Pelargopsis magnus, the remains figured. A. Milne-Edwards, Ois. Foss. Fr. pl. lxxii.

Platalea leucorodia is figured. C. J. Sundevall, Sv. Fogl. pl. lxxvii. fig. 2.

Tantalidæ.

Ibis pagana and *Ibidopodia palustris* are figured. A. Milne-Edwards, Ois. Foss. Fr. pls. lxix.–lxxi.

Ibis falcinellus is figured. C. J. Sundevall, Sv. Fogl. pl. lxxvii. fig. 3.

Tantalus longimembris, from Amoy, is described as a new species, remarkable for its long legs. R. Swinhoe, Ibis, 1867, pp. 227–230.

Thresciornis strictipennis, head figured. S. Diggles, Orn. Austral. part xiv.

ANSERES.

Phœnicopteridæ.

Four species of the genus *Phœnicopterus*, represented by twenty-two mounted skins, are contained in the Leyden Museum. H. Schlegel, Mus. P.-B. *Anseres*, pp. 116–118.

Anatidæ.

Schlegel, H. Muséum d'Histoire Naturelle des Pays-Bas. 9me Livraison. Anseres. Leyde: 1867. Royal 8vo, pp. 109–122.

Completes the portion noticed last year (Zool. Rec. iii. p. 111), adding two species to those then included, which brings up the number of species (of real *Anatidæ* as we consider them) contained in the collection to 132, omitting the *Phœnicopteridæ*, of which four species are classed by the author among the *Anseres*.

Droste, Ferd. von. Der Entenstrich. Journ. für Orn. 1867, pp. 64–70.

——. Beobachtungen auf einer Rattgansjagd. *Tom. cit.* pp. 89–94.

The remarks in the first of these papers and (so far as they are ornithological) in the last chiefly refer to *Bernicla brenta*.

Bernicla leucopsis is figured. J. Gould, B. Gr. Br. part xii.

Chloephaga canagica is figured. D. G. Elliot, B. N. Am. part iii.

Cygnus passmorii (Zool. Rec. ii. pp. 134, 135) is probably identical with *C. buccinator*. The rufous colouring is certainly not diagnostic in this family. J. Murie, P. Z. S. 1867, pp. 8–13.

Cygnus falconeri and *musicus* (?), their fossil remains (Zool. Rec. ii. p. 134) described and figured. W. K. Parker, Trans. Zool. Soc. vi. pp. 119–124, pl. xxx.

Hybrids between *Cygnus olor* and *C. atratus*. W. Hartmann, Zoolog. Garten, 1867, p. 441.

Hybrids between *Cygnus olor* and *Anser cinereus domesticus*, *Anas boschas* and *A. acuta*, and this last and *A. strepera* noticed. J. P. van Wickevoort-Crommelin, Arch. Néerl. 1867, pp. 447–452.

Dendrocygna eytoni has occurred in Victoria. F. M'Coy, Ann. & Mag. N. H. 3rd ser. xx. p. 177.

Anas blanchardi, *A. consobrina*, *A. natator*, *A. velox*, *A. sansaniensis*, and *A. robusta* are figured and described. A. Milne-Edwards, Ois. Foss. Fr. pp. 129-155, pls. xxi.–xxvi.

Gastornis parisiensis is referred to the neighbourhood of the *Anatidæ*. *Id. op. cit.* pp. 165–177, pls. xxviii., xxix.

Querquedula madagascariensis, *Dafila vinsoni*, and *Anas moreli* are described as new species from Madagascar, but are subsequently identified with *Q. hottentota*, *D. bernieri*, and *A. melleri* (Zool. Rec. i. p. 94). A. Grandidier, R. Z. 1867, pp. 87, 88, 255.

Anas zonorhynchus (Zool. Rec. iii. p. 112) obtained in Japan. H. Whitely, jun., Ibis, 1867, p. 207.

"*Querquedula andamanensis*, Tytler," is described from recollection as probably a new species from the Andamans, brown, with blue wings, somewhat like the South-American *Q. ipecuteri*. R. C. Beavan, Ibis, 1867, p. 333.

Hybrids between *Anas clypeata* ♂ and *A. sponsa* ♀. — Bouillod, Bull. Soc. Imp. d'Acclimat. 1867, pp. 396, 397.

Branta rufina is figured. J. Gould, B. Gr. Br. part xi.

Nyroca australis is figured. S. Diggles, Orn. Austral. part xi.

Œdemia perspicillata occurred in Scilly, autumn of 1865. E. H. Rodd, Journ. R. Inst. Cornw. Oct. 1866, p. 152 (Zool. Rec. ii. p. 135). In Shropshire about the same time. W. Beckwith, Zool. S. S. p. 633. Again in Scilly in 1867, E. H. Rodd, *tom. cit.* p. 1017. Figured, as also *Œ. fusca*. J. Gould, B. Gr. Brit. part xii.

Lampronetta fischeri is figured. D. G. Elliot, B. N. Am. part v.

Biziura lobata, head figured. S. Diggles, Orn. Austral. part xiii.

Laridæ.

Larus argentatus, *L. fuscescens*, and *L. fuscus*, their diagnostic characters given. P. L. Sclater, P. Z. S. 1867, pp. 315, 316.

Larus occidentalis and *L. californicus* are figured. D. G. Elliot, B. N. Am. part vii.

Larus canus, a very full history of the species, as observed by the author in Ireland. H. Blake-Knox, Zool. S. S. pp. 625–631. Figured, J. Gould, B. Gr. Br. part xi.

Rissa tridactyla, minute details of its changes of plumage. H. Blake-Knox, Zool. S. S. pp. 548–553.

Xema sabinii, its occurrence in Yorkshire. W. W. Boulton, Zool. S. S. pp. 543, 544. Near Plymouth. J. Gatcombe, *tom. cit.* p. 557; A. Furneaux, p. 608; F. O. Morris, p. 710. In Somerset. M. A. Mathew, *tom. cit.* p. 992.

Larus desnoyersi, *L. elegans*, and *L. totanoides* are figured and described. A. Milne-Edwards, Ois. Foss. Fr. pp. 344–360, pls. liv.–lviii.

Hydrornis natator and *Dolichopterus viator*, Aymard, are figured. *Id. op. cit.* pl. lvii.

Sterna nigra, *S. leucoptera*, and *S. cantiaca* are figured. C. J. Sundevall, Sv. Fogl. pl. lxxviii. figs. 1–4.

Sterna fuliginosa, its breeding-place on Ascension described, but the species only mentioned by its local name. C. Collingwood, Zoologist, S. S. pp. 980–983. (*Cf. tom. cit.* p. 1018.).

Sterna melanogaster is figured. J. Gould, B. As. part xix.

Sterna paradisea is figured. *Id.* B. Gr. Br. part xi.

Sterna lunata and *Anous cinereus* are figured. O. Finsch & G. Hartlaub, Beitr. Faun. Centralpolyn. Taf. xiii. figg. 3, 4.

Thalasseus caspius (ex America) is figured. D. G. Elliot, B. N. Am. part iv.

Procellariidæ.

Some nineteen species of this family form the subject of very valuable remarks. F. W. Hutton, Ibis, 1867, pp. 185–193.

Diomedea fuliginosa, Gmel., var. *cornicoides*, is the name of an apparently unnoticed variety, observed between lat. 36° 28′ S., long. 2° 18′ E. [*qu.* W. ?], and lat. 37° 26′ S., long. 163° 43′ E. Individuals vary a good deal, from being almost white on the back of the neck and shoulders to the normal colour of the species. *Id. ut suprà*, p. 186.

Puffinus dichrous is described as a new species from M'Kean's Island, generally resembling *P. assimilis*, but differing in the smoky-brown of the under tail-coverts, with which colour also the smoky-black of the head, lores, and space round the eyes is covered. O. Finsch & G. Hartlaub, Beitr. Faun. Centralpolyn. pp. 244, 245.

Procellaria, sp. ?, a supposed new species, resembling *P. hæsitata*, Licht. (*P. cinerea*, Gmel.), observed in about lat. 36° S., long. 16° E. F. W. Hutton, Ibis, 1867, pp. 187, 188.

Procellaria leucorrhoa, Vieill., is the name by which *P. leachi*, auctt., should be known. J. P. van Wickevoort-Crommelin, Arch. Neérl. 1867, pp. 84–87.

"*Thalassidroma leachi* ?", a bird so referred, but which cannot possibly have been that species, observed from lat. 14° N., long. 26° W., to lat. 36° S. [Possibly *P. furcata*, Gmelin ?] F. W. Hutton, Ibis, 1867, p. 190.

Thalassidroma monorrhis is described as a new species from Middle China, resembling *T. melania*, Bp. (Consp. Av. ii. p. 196), but having "only one opening to its nose." R. Swinhoe, Ibis, 1867, pp. 385–387.

Ossifraga gigantea, *Diomedea chlororhynchus*, *Cymochorea melania*, and *Halocyptena microsoma* (Zool. Rec. i. p. 96) are figured. D. G. Elliot, B. N. Am. parts iv., v., and viii.

Procellaria pelagica is figured. C. J. Sundevall, Sv. Fogl. pl. lxxvii. fig. 5.

Pelecanidæ.

Pelecanus gracilis, *Graculus miocænus*, *G. littoralis*, *G. intermedius*, *Sula arvernensis*, and *S. ronzoni* are figured and described. A. Milne-Edwards, Ois. Foss. Fr. pp. 250–271, pls. xxxviii.–xliv.

Pelagornis miocænus, heretofore referred to the "Longipennes," is placed among the "Totipalmes." *Id. op. cit.* pp. 273–276, pl. xlv.

Pelecanus conspicillatus is figured. S. Diggles, Orn. Austral. part xii.

Sula sinicadvena (Zool. Rec. ii. p. 136) is referred to *S. fiber* (L.). E. Blyth, Ibis, 1867, p. 178.

Phalacrocorax æolus is described as a new species from Amoy. R. Swinhoe, Ibis, 1867, pp. 395, 396.

Graculus bairdi is figured. D. G. Elliot, B. N. Am. part vi.

Colymbidæ.

The three Old-World species of *Colymbus* are represented in the Leyden Museum by 38 mounted specimens. H. Schlegel, Mus. P.-B. *Urinatores*, pp. 30–33.

Colymboides minutus is described and figured. A. Milne-Edwards, Ois. Foss. Fr. pp. 297–300, pl. liv. figs. 1–14.

Colymbus torquatus [sc. *glacialis*], its osteology and myology described. E. Coues, Mem. Boston Soc. N. H. i. pp. 131–172, pl. 5.

Spheniscidæ.

Schlegel, H. Muséum d'Histoire Naturelle des Pays-Bas. 9me Livraison. Urinatores. Leyde: 1867. Royal 8vo, pp. 6–52.

In this portion of his excellent catalogue the author includes, besides the *Spheniscidæ*, the families *Colymbidæ*, *Podicipidæ*, and *Alcidæ*, under the common name *Urinatores*—an arrangement, we think, not to be followed, and one which, when we take into consideration the fact that he subdivided a preeminently natural family like the *Falconidæ* into no fewer than nine groups, we cannot but regard as illogical. *Heliornis* (including *Podica* and *Podoa*) is also placed here, notwithstanding that its anatomy (Brandt, Beitr. zur Kenntniss der Naturgeschichte der Vögel, St. Petersburg: 1839, pp. 117–122; and Jerdon, B. Ind. iii. p. 721) and habits (Blyth, J. A. S. B. xxviii. p. 415, and Tickell, *tom. cit.* p. 455) have been shown to be essentially those of the *Rallidæ*. The *Spheniscidæ* are represented in the Leyden Museum by 32 specimens, referred to 12 species. [*Cf.* Ibis, 1868, pp. 110–112.]

Podicipidæ.

Twelve species of this family, all referred to the genus *Podiceps*, are represented in the Leyden Museum by 168 specimens. H. Schlegel, Mus. P.-B. *Urinatores*, pp. 34–48.

Podiceps californicus is figured. D. G. Elliot, B. N. Am. part iii.

Alcidæ.

Eighteen species of this family, according to the author's determination of them, are contained in the Leyden Museum, where they are represented by 125 mounted specimens, and referred to three genera, *Alca*, *Simorhynchus*, and *Lunda*. H. Schlegel, Mus. P.-B. *Urinatores*, pp. 13–30.

Alca impennis. Two eggs from M. Demeezemaker's collection figured. C. F. Dubois, Arch. Cosmol. 1867, pp. 30–35, pl. 3. [*Cf.* Ibis, 1868, p. 112.]

Uria grylle has occurred for the first time on record in Norfolk. T. E. Gunn, Zool. S. S. p. 710. Obtained in Japan. H. Whitely, jun., Ibis, 1867, p. 210.

Phaleris tetracula, *Ptychorhamphus aleuticus*, *Brachyrhamphus temminckii*, *Phaleris pusilla*, and *Brachyrhamphus hypoleucus* are figured. D. G. Elliot, B. N. Am. parts iii., iv., vi., and viii.

STRUTHIONES.

STRUTHIONIDÆ.

Dromæus novæ-hollandiæ. On the advantages to be derived from its domestication, as shown by the author's experiments. A. Touchard, Bull. Soc. Imp. d'Acclimat. 1867, pp. 2–7.

Struthio camelus. Notes on its domestication at the Cape of Good Hope. — Héritte, Bull. Soc. Imp. d'Acclimat. 1867, pp. 122–124, and 319–322. At Grenoble. — Bouteille, *tom. cit.* pp. 316–318. At Madrid. A. Graells, *tom. cit.* pp. 477–479.

Casuarius johnsoni is described and figured as a new species from Northern Australia, differing from *C. galeatus* in having the helmet higher than it is long, the skin of the neck thin and smooth, with no ridges behind, and the glands on its side scarcely developed, and the inner claw straight and very sharp. S. Diggles, Orn. Austral. parts xii. and xiii. Further notes on *C. johnsoni*: F. Müller, P. Z. S. 1867, pp. 241, 242. Identical with *C. australis*: P. L. Sclater, *tom. cit.* p. 242; G. Bennett & W. Carron, *tom. cit.* pp. 473, 474. Described from the specimen presented to the Australian Museum. G. Krefft, *tom. cit.* pp. 482, 483.

Casuarius bennetti, an abstract of Captain Jouan's notes on this species (Mém. Soc. Sc. Nat. Cherbourg, ix.). R. Z. 1867, pp. 75, 76.

DINORNITHIDÆ.

Dinornis robustus and *Cnemiornis calcitrans*. (For Prof. Owen's papers on these, see above, under "ANATOMY.")

Dinornis robustus and *D. maximus* (sp. nov.). Notices of them to be subsequently published in the 'Zoological Transactions.' R. Owen, P. Z. S. 1867, p. 891.

Dinornis gigantea. Remarks on an egg containing bones of the embryo. J. Hector (see "OOLOGY").

Dinornis (sp.?). Remains found at Waingongoro have undergone the process of cooking. G. S. Spencer, Zool. S. S. p. 638.

ÆPYORNITHIDÆ.

Æpyornis maximus. Notice of an egg brought to Toulouse. N. Joly, Comptes Rendus, lxv. (2 Sept.) pp. 422–424. Description of the locality where its remains have been found. A. Grandidier, Comptes Rendus, lxv. (9 Sept.) pp. 476–478. [*Cf.* R. Z. 1867, p. 338; Ibis, 1868, pp. 65–68.] Observations on its egg, with indications of a smaller species, *Æ. grandidieri*. G. D. Rowley, P. Z. S. 1867, pp. 892–895. [See "OOLOGY."]

REPTILIA

BY

ALBERT GÜNTHER, M.A., M.D., PH.D., F.R.S. &c.

A. *Work in progress.*

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, and iii. p. 117. We have received in the year 1867 five other parts of plates, viz. Nos. 20–24, but no continuation of the text. The snake figured under the name of *Toxodon* or *Loxodon microlepis* is an interesting addition to ophiology; formerly it was described as *Spalerosophis* (see Zool. Record, ii. p. 153). Otherwise these parts do not contain many novelties.

B. *Separate Publications.*

GRAY, J. E. The Lizards of Australia and New Zealand in the Collection of the British Museum. (With 18 plates of the new species, by Mr. FORD.) London, 1867. 4to, pp. 7. (B. Quaritch.)

This publication is the completion of the herpetological part of the 'Voyage of the Erebus and Terror.' At the time when this work was discontinued, the plates had been drawn, at the expense of the author, remaining in his possession ever since. By publishing them he has supplied a want very much felt by all students of Australian herpetology. The plates belong to the most artistic productions of Mr. Ford, rendering detailed descriptions unnecessary; and the author thought himself the more justified in dispensing with them, as all the species have been characterized in his 'Catalogue of Lizards.' A general systematic list of the species known to inhabit Australia and New Zealand has been added. We shall subsequently mention the species figured; a few of the figures were already published in the 'Zoology of the Voyage of the Erebus and Terror.' This publication is indispensable to the student of Australian herpetology.

STEINDACHNER, F. Reise der österreichischen Fregatte Novara um die Erde in den Jahren 1857, 1858, 1859 unter den

Befehlen des Commodore B. von Wüllerstorf-Urbair. Zoologischer Theil. Reptilien. Wien 1867. 4to, pp. 98, with 3 plates. Amphibien. Wien, 1867. 4to, pp. 70, with 5 plates. [Voyage of the Austrian Frigate 'Novara' round the globe during the years 1857–59, under the command of Commodore B. von W.-U. Zoological part. Reptiles; Amphibians.]

In the two parts mentioned the author has not limited himself to an account of the booty brought together by the naturalists of the voyage of the 'Novara,' but, receiving into the list species collected by Dr. Stolicka in the Himalayas, by Natterer in the Brazils, by Ida Pfeiffer in various parts of the globe, donations by the author, in short, apparently the greater part of the species contained in the Vienna collections, he has augmented his contribution to nearly 300 species of Reptiles and about 100 Batrachians. No completeness is aimed at, either of a particular group, or of a fauna; no observations on the life of the animals collected, no remarks on the reptilian character of the countries visited enliven the dry systematic enumeration of the species. The novelties or real additions to our knowledge of Reptiles are very moderate in number; and about one-fifth of the genera or species supposed by the author to be new have already proved to be described forms, and many others have not yet been critically examined. The greater part of the Reptiles are mentioned by name only, the synonymy being added to each species; whilst for the Batrachians detailed descriptions have been furnished, the greater part of the synonymy being omitted.

Herpetologists may congratulate themselves that the final description of this part of the 'Novara' voyage has been entrusted to a more conscientious worker than the gentleman appears to be who prepared the preliminary list of the 'Novara' "Ausbeute." When we compare the latter with the determinations of the present work we cannot help noticing the disinterestedness of Dr. Steindachner, who has adopted names given by his predecessor, if they happened to be serviceable, although the species were actually introduced into science by himself.

C. *Papers published in Journals.*

Beddome, R. H. Descriptions and figures of five new Snakes from the Madras Presidency. Madras Quart. Journ. Med. Sc. 1867, pp. 14–16, with 2 plates.

This is another important addition to the family *Uropeltidæ*. In a note appended to the paper he makes a number of corrections of his former publications, chiefly taken from the Recorder's 'Reptiles of British India.' If the author thinks that names given by Mr. Jerdon should supersede those given by the Re-

corder, he ought to prove first that Mr. Jerdon's notes were taken from specimens belonging to the species to which he applies them *now*. Those notes being of a general and vague nature, it will be necessary to reexamine the *typical specimens* before the right of priority is claimed for them.

Bocage, J. V. B. du. Segunda lista dos reptis das possessões portuguezas d'Africa occidental que existem no Museu de Lisboa.—Diagnoses de quelques reptiles nouveaux de l'Afrique occidentale. Jornal de Sci. math. phys. e nat. Lisboa, No. 3, 1867, pp. 217–232, with a plate.

For the first list, see Zool. Record, iii. p. 117.

——. Descriptions of two new Saurians from Mossamedes (West Africa). Ann. & Mag. Nat. Hist. 1867, xx. pp. 225–228.

——. Batraciens nouveaux de l'Afrique occidentale (Loanda et Benguella). Proc. Zool. Soc. 1867, pp. 843–846, with woodcuts.

Cope, E. D. A review of the species of *Amblystomidæ*. Proc. Ac. Nat. Sc. Philad. 1867, pp. 166–211.

——. On the structure and distribution of the genera of the *Arciferous Anura*. Journ. Acad. Nat. Sc. Philad. 1866 (published in 1867), pp. 67–97, with a plate. With a Supplement on the osseous structures of the Types of the Urodela, pp. 97–112.

——. On the families of the *Raniform Anura*. Ibid. 1867, vi. pp. 189–206.

Duméril, A. Métamorphoses des Batraciens urodèles à branchies extérieures du Mexique dits Axolotls, observées à la ménagerie des Reptiles du Muséum d'histoire naturelle. Ann. Sc. Nat. 1867, vii. pp. 229–254, with woodcuts.

The principal portion of this paper is reproduced in Bull. Soc. d'Acclimat. 1867, pp. 563–573.

——. Expériences faites à la Ménagerie des Reptiles du Muséum d'histoire naturelle, sur les Batraciens urodèles à branchies extérieures du Mexique, dits Axolotls, et démontrant que la vie aquatique se continue sans trouble apparent après l'ablation des houppes branchiales. Compt. Rend. 1867, August 5, pp. 242–246 (Ann. & Mag. Nat. Hist. xx. pp. 446–449).

——. Description de diverses Monstruosités observées à la ménagerie des Reptiles du Muséum d'histoire naturelle sur les Batraciens urodèles à branchies extérieures dits Axolotls. Nouv. Arch. Mus. iii. 1867, pp. 119– (not concluded in the part published), with a plate.

Grandidier, A. Liste des Reptiles nouveaux découverts en 1866, sur la côte sud-ouest de Madagascar. Rev. et Mag. Zool. 1867, pp. 232–234.

Gray, J. E. Synopsis of the species of recent Crocodilians or Emydosaurians, chiefly founded on the specimens in the British Museum and the Royal College of Surgeons. Trans. Zool. Soc. vi. 1867, pp. 125–169, with four plates and numerous woodcuts (read Decemb. 9th, 1862).

——. Description of a new Australian Tortoise (*Elseya latisternum*). Ann. & Mag. Nat. Hist. 1867, xx. pp. 43, 44.

Günther, A. Additions to the knowledge of Australian Reptiles and Fishes. Ann. & Mag. Nat. Hist. 1867, xx. pp. 45–57.

——. Contribution to the Anatomy of *Hatteria* (*Rhynchocephalus*, Owen). Philos. Trans. vol. clvii. 1868, pp. 595–629, with 3 plates. Abstract in Proc. Roy. Soc. 1867, pp. 460–462, or in Ann. & Mag. Nat. Hist.

Hensel, R. Beiträge zur Kenntniss der Wirbelthiere Süd-Brasiliens. Batrachier. Wiegm. Arch. 1867, pp. 120–162. [Contributions to the knowledge of the Vertebrates of Southern Brazil. Batrachians.]

The author passed several years in Southern Brazil, especially in the province S. Pedro do Rio Grande do Sul, which is zoologically almost unknown. He appears to have brought together rather considerable collections of Vertebrata, and he intends to publish the more important results of his researches in a series of papers, of which the present is the commencement. Descriptions containing observations from living, as well as from preserved examples, like those of Dr. Hensel's contribution, are invaluable, especially if they be preceded by a diagnosis expressing the principal specific characters. We trust also that the author will examine typical examples before he uses Spixian names for the species collected by him.

Keferstein, W. Ueber einige neue oder seltene Batrachier aus Australien und dem tropischen Amerika. Nachricht. Ges. Wiss. & Univers. Göttingen, 1867, pp. 341–361.

Leydig, F. Ueber die Molche (*Salamandrina*) der württembergischen Fauna. Wiegm. Arch. 1867, pp. 163–282, with three plates. [On the Newts of Würtemberg.]

Lilljeborg, W. Description of *Halcrosia afzelii*, a new Crocodile from Sierra Leone, West Africa. Proc. Zool. Soc. 1867, pp. 715–718, with woodcuts.

Mivart, St. G. On *Plethodon persimilis* of Gray. Proc. Zool. Soc. 1867, pp. 695–699, with woodcuts.

PETERS, W. Herpetologische Notizen. Monatsber. Ak. Wiss. Berlin, 1867 (January), pp. 13–37.

Notes on Reptiles, new or little known, chiefly from Australia and the eastern parts of the Indian Region.

——. Ueber eine Sammlung von Amphibien aus Otjimbingue in Südwest-Africa. Ibid. (April) pp. 234–237, with a plate.

PUTNAM, F. W. New-England Reptiles in April. American Naturalist, i. 1867, pp. 107–109.

Notes on the appearance and propagation of some North-American amphibians. Compared with species of North and Central Europe, the time which elapses between the laying and hatching of the eggs is very short; those of *Rana silvatica*, *Scaphiopus holbrookii*, and *Hyla versicolor* are hatched in five or six days, those of *Acris pickeringii* in twelve, and of *Bufo americanus* in ten.

REINHARDT, J. To nye Homalopsider. Vidensk. Meddel. Naturh. Foren. Kjöbenh. 1866, pp. 151–161, with woodcuts.

STEINDACHNER, F. Herpetologische Notizen. Sitzgsber. Ak. Wiss. Wien, 1867, lv. pp. 263–273, with four plates.

D. *Anatomical Publications.*

BRANDT, E. Ueber den *ductus caroticus* der lebendiggebärenden Eidechse (*Lacerta crocea* s. *Zootoca vivipara*). Bull. Ac. Sc. St. Pétersb. xi. 1867, pp. 439–444, with woodcuts.

CIACCIO, G. V. Intorno alla minuta fabbrica della pelle della *Rana esculenta*. Osservazioni microscopiche. Giorn. Sc. Nat. ed Econ. Ist. Tecn. di Palermo, ii. 1866, pp. 103–151, tav. 9–11.

HAIR, PH. On the arrangement of the muscular fibres of the Alligator. Journ. of Anat. & Physiol. 1867, i. pp. 26–41.

LANGER, C. Ueber das Lymphgefässsystem des Frosches. Sitz. Ak. Wiss. Wien, 1867, lv. pp. 593–636, with three plates. [On the lymphatic system of the Frog.]

MIVART, ST. G. Notes on the Myology of *Iguana tuberculata*. Proc. Zool. Soc. 1867, pp. 766–797, with numerous woodcuts.

SCHWEIGGER-SEIDEL, —, und DOGIEL, —. Ueber die Peritonealhöhle der Frösche und ihre Verbindungen mit dem lymphatischen System. Ber. Ges. Wiss. Leipz. 1866, p. 247. [On the peritoneal cavity in Frogs, and its connexions with the lymphatic system.]

THE GENERAL SUBJECT. CONTRIBUTIONS TO FAUNAS.

Dr. GÜNTHER, on the occasion of his examination of *Hatteria* (*Rhynchocephalus*), has assigned to this Saurian its place in the following arrangement of recent Reptilia (Philos. Trans. vol. clvii. p. 625):—

I. SQUAMATA.
First order *Ophidia*.
Second order *Lacertilia*. A. Amphisbænoidea. B. Cionocrania. C. Chamæleonoidea. D. Nyctisaura.
Third order *Rhynchocephalia*.

II. LORICATA.
Fourth order *Crocodilia*.

III. CATAPHRACTA.
Fifth order *Chelonia*.

Austria. Notes on the dates on which the Reptiles of the Austrian Empire commence and terminate their hybernation, by Fritsch, Sitzgsber. Ak. Wiss. Wien, 1867, lv. p. 215 (see p. 8).

Meran. Dr. Milde has made some observations on the Lizards and Snakes in the neighbourhood of Meran. *Lacerta agilis* is wanting; *L. muralis* is found to a height of 4500 feet, *L. vivipara* between 3500 and 7000 feet above the level of the sea. 44. Jahresberïcht d. Schles. Ges. f. vaterländ. Cult. 1867, p. 55.

Palestine. Mr. Tristram's work on the Natural History of the Bible has been noticed above, p. 3.

Japan. Dr. v. Martens (Preuss. Ostasiat. Expedit. pp. 109–116, see above p. 1) gives a general sketch of the herpetological fauna of this country.

West Africa. Dr. Bocage has given a second list of Reptiles received by the Lisbon Museum from the Portuguese possessions in West Africa since the publication of the first list (see Zool. Record, iii. p. 121): Jorn. Sc. math. phys. e nat. Lisboa, iii. pp. 217–232. The list comprises 4 Tortoises, 21 Saurians, and 11 Ophidians. Notes are appended to most of them; and the more important species will be mentioned subsequently.

South-western Africa. Prof. Peters enumerates 18 species of Saurians and Ophidians (1 Bufo) collected at Otjimbingue, Monatsber. Ak. Wiss. Berl. 1867, p. 235. He had received 16 others from the same locality on a former occasion, ibid. 1862, p. 15.

Madagascar. M. Grandidier describes two Tortoises, seven Lizards, and one Snake, collected by him on the south-west coast, as new, in Rev. et Mag. Zool. 1867, pp. 232–234.

Southern Brazil. Dr. Hensel gives descriptions of or remarks on twenty-six Batrachians collected by him in the province S. Pedro do Rio Grande do Sul. Wiegm. Arch. 1867, pp. 120–162.

Australia. Dr. Günther has published notes on 81 species of Reptiles received by the British Museum in the course of the last years from various parts of Australia. One-fourth of the species mentioned in this paper were new to science, and will be referred to subsequently. Ann. & Mag. Nat. Hist. 1867, xx. pp. 45–57.

Dr. Gray enumerates 129 species in his list of the Lizards of Australia and New Zealand, see above, p. 126.

CHELONIA.

Testudo planicauda, sp. n., Grandidier, Rev. et Mag. Zool. 1867, p. 233. ♂. Supra brunneo-nigra; scutorum areolis granulosis ochreis rarisque radiis ab illis divergentibus flavidis; scutis flavo cinctis. Scuto nuchali parvo, caudali unico; secundo tertioque dorsali omnino planis. Infra flava, areolis nigro maculatis. Sterno latissimo, antice paulo longiore testa. Capite brunneo flavis maculis; cauda maxime depressa, extrema parte squamis magnis tecta. Long. testæ 0m·15.—Madagascar.

Dumerilia, g. n., Grandidier, *l.c.* p. 232. Capite lato, depresso, non sulcato; oculis lateralibus; mandibula robusta, subuncinata, non denticulata. Scutis temporalibus magnis. Testa oblonga, curvata, retro depressa; scuto nuchali nullo. Pedibus maxime palmatis, anterioribus 5, posterioribusque 4-cingulatis. Pelle nuda, tuberculis sparsa; duobus cirrhis brevibus sub mento; pedibus posterioribus squamis duabus magnis rotundatis. Cauda inunguiculata et superne cum squamis obliquis et lunaribus in geminata serie.—*Dumerilia madagascariensis*. Capite brunneo, aurantio-flavido vermiculato; callo pedibusque nigrescentibus. Testa supra brunnea minutissimis punctis aurantiis distincta, subtus rubro-brunnea, partito flava.—Long. testæ 0m·35. —Madagascar.

Elseya, g. n., Gray, Ann. & Mag. Nat. Hist. 1867, xx. p. 43. A connecting link between Australian and South-American Hydraspides. No nuchal plate; chin two-bearded; upperside of the neck warty; temples scaly. To this genus belong *Chelymys dentata* (Gray) and *Elseya latisternum*, sp. n., p. 44, from Cape York.

CROCODILIA.

Dr. J. E. Gray's memoir on recent Crocodiles, read before the Zoological Society in 1862, is published in Trans. Zool. Soc. vi. pp. 125–169. Without entering into detailed descriptions, the author gives those of his observations which appeared to contribute to a better knowledge of the species, the materials examined amounting to more than two hundred examples. He draws attention to the very great change that takes place in the shape and proportions of the head of the animal in the different stages of its growth. The changes seem nearly similar in all the species, and may be divided into three stages, viz. those of the young, nearly full-grown, and the adult or aged specimens. The head and snout of the young are generally depressed, with more or less distinctly marked symmetrical ridges and depressions; and these characters are gradually modified until the animal attains nearly its full size, the skull becoming thicker and more solid, but yet retaining most of the characters that distinguish its young state. After this period, as the animal increases in age, the skull becomes more and more convex, swollen, and heavy, assuming a very different external form. We need not enumerate the single species, as the author treats of all the

species known; indeed the memoir is indispensable to all working at this suborder. The following is a brief outline of the systematic arrangement :—

Fam. 1. Gavialidæ: 1. *Gavialis* (sp. 1); 2. *Tomistoma* (sp. 1).

Fam. 2. Crocodilidæ:—Normal: 1. *Oopholis* (sp. 2); 2. *Bombifrons* (sp. 2); 3. *Palinia* (sp. 2); 4. *Crocodilus* (sp. 1); 5. *Molinia* (sp. 2). Aberrant: 6. *Halcrosia* (sp. 1); 7. *Mecistops* (sp. 1).

Fam. 3. Alligatoridæ: 1. *Jacare* (sp. 7); 2. *Caiman* (sp. 2); 3. *Alligator* (sp. 1).

Of these 23 species two are described for the first time, viz. *Jacare multiscutata*, p. 164, from Brazil, and *Jacare hirticollis*, p. 165, from Demerara. The author has entered very carefully into the history or synonymy of all species. Besides the numerous woodcuts, the memoir is illustrated by four plates: 1. Skulls of *Bombifrons nigricans* and *Halcrosia nigra*; 2. Skulls of *Mecistops cataphractus* and *Molinia intermedia*; 3. *Jacare ocellata*; and 4. *Jacare longiscutata*.

Crocodilus niger. Mr. Cope claims priority for his *Osteolæmus* against *Halcrosia* (Gray), and states that his *O. tetraspes* should not be identified with *H. nigra* (Gray). Proc. Ac. Nat. Sc. Philad. 1867, p. 209.

Halcrosia afzelii, sp. n., Lilljeborg, Proc. Zool. Soc. 1867, p. 715, Sierra Leone.

Alligator. On its myology see Hair, Journ. of Anat. & Physiol. i. 1867, pp. 26–41.

RHYNCHOCEPHALIA.

Hatteria. Dr. Günther has examined the anatomy of this singular Saurian. An abstract of the paper appeared in Proc. Roy. Soc. 1867, pp. 460–462, and Ann. & Mag. Nat. Hist. 1867, xx. pp. 128–129; and the entire paper in Philos. Trans. vol. clvii. pp. 595–629, pls. 26–28. Its chief peculiarities consist in the structure of the skull, amphicœlian vertebræ (Owen), uncinate processes of the ribs, presence of a complicated abdominal sternum, in the dentition, absence of a copulatory organ, &c. The position of *Hatteria* in the system has been indicated above (p. 131).

Hatteria punctata figured by Gray, Austral. Liz. pl. 20.

LACERTILIA.

Mr. St. G. Mivart has supplied a great desideratum in working out the details of the myology of a Lacertian type (*Iguana*), and illustrating it with a sufficient number of woodcuts. Proc. Zool. Soc. 1867, pp. 766–797.

In our abstract of Mr. Cope's system of Saurians (Zool. Record, ii. p. 109), the "second suborder *Nyctisaura*," with the single family of *Nyctisaura*, and the "fourth suborder *Ophiosauri*, with the single family of *Amphisbænia*," have been inadvertently omitted *.

* My attention has been called to this omission by a remark of Mr. Cope in Journ. Ac. Nat. Sc. Philad. v. p. 67, footnote. The omission is partly Mr.

Amphisbænidæ.

Lepidosternum octostegum (A. Dum.). Remarks on an example by Steindachner, Novara, Rept. p. 53.

Monitoridæ.

Odatria punctata and *ocellata* figured by Gray, Austral. Liz. pls. 1 & 2.
Monitor gouldii figured by Gray, *l. c.* pl. 3.
Hydrosaurus giganteus figured by Gray, *l. c.* pl. 4.

Lacertidæ.

Eremias benguelensis, sp. n., Bocage, Jorn. Sc. math. phys. e nat. Lisboa, iii. p. 229, from Benguella.

Scapteira (?) *reticulata*, sp. n., Bocage, Ann. & Mag. Nat. Hist. xx. p. 225, from Mossamedes.

Pachyrhynchus, g. n., Bocage, *l. c.* p. 226. Head wide and flattened; muzzle much depressed, wide, spatulate, with its trenchant margins greatly exceeding the outline of the opening of the mouth (figs. 1 & 2). Tongue sagittate, emarginate at its extremity, covered with squamiform papillæ. Palate not furnished with teeth. Nostrils looking directly upwards, placed in the midst of three shields, as in *Eremias*. Rostral shield much depressed, forming with the first seven superior labials the projecting border of the muzzle. No free antepectoral fold. Ventral shields smooth, forming regular longitudinal and transverse bands. Tail broad and depressed at the base, rounded throughout the rest of its extent. No femoral pores. Five unequal digits on each foot; these are compressed, covered with smooth scales beneath, and denticulated at the edges.—*Pachyrhynchus anchietæ*, sp. n., Bocage, *l. c.* p. 227, from Mossamedes.

Zonuridæ.

Gerrhosaurus quadrilineatus, sp. n., Grandidier, Rev. et Mag. Zool. 1867, p. 233. Supra umbrato-brunneus; lineis quatuor albido-flavis, duabus e naso ad apicem caudæ, duabus e nucha ad tertiam caudæ partem. Infra aurantio-miniatus. Capite albida macula distincto; pedibus corpore concoloribus, albidis punctis notatis. Long. e nasi apice ad basin caudæ 0^{m}·14, caudæ 0^{m}·18. —Madagascar.

Lialidæ.

Lialis bicatenata (Gray)=*L. punctulata* (Gray), var. Günther, Ann. & Mag. Nat. Hist. xx. p. 46.—*Lialis punctulata* and *burtonii* figured by Gray, Austral. Liz. pl. 8. figs. 1, 2.

Pygopodidæ.

Pygopus squamiceps figured by Gray, *l. c.* fig. 3.—*Pygopus squamiceps* (Gray)=*P. lepidopus* (Lacép.). Günth. *l. c.* p. 45.

Cope's fault. He professes to give, in the second part of this paper, "the characters of the tribes and families," but omits therein the *Nyctisaura* and *Amphisbæna*, which he probably considered sufficiently characterized in the first part, containing the characters of the suborders. Unfortunately, in writing out the abstract, I confined myself to the second part, which contained the more original portion of Mr. Cope's researches.

Scincidæ.

Hinulia. Dr. Gray, *l. c.* pl. 10, figures *H. elegans*, fig. 1, *H. inornata*, fig. 2, and *H. greyii*, fig. 3; and on plate 11, *H. ornata*, fig. 1, *H. richardsonii*, fig. 2, and *H. tenuis*, fig. 3.

Hinulia fasciolata, sp. n., from Queensland, and *Hinulia branchialis*, sp. n., from Champion Bay, described by Dr. Günther, Ann. & Mag. Nat. Hist. xx. p. 47.

Hinulia gerrardii (Gray) has a very large molar-like tooth in both jaws; so that it may be separated into a distinct genus, *Hemisphæriodon*. Peters, Monatsber. Ak. Wiss. Berl. 1867, p. 23.—It is figured by Gray, *l. c.* pl. 9.

Euprepes. Prof. Peters has examined several species of this and allied genera (Monatsber. Ak. Wiss. Berl. 1867). *Mocoa cumingii* (Gray) has supranasal shields; therefore this specific name cannot be retained for *Otosaurus cumingii* (Gray), which belongs to the same genus; the name *Eu. otus* is proposed for it, p. 20.—The name of *Eu. olivaceus* (ibid. 1862, p. 21) is to be changed into *Eu. sulcatus*, and that of *Eu. australis* (ibid.) into *Eu. occidentalis*, p. 20.—*Euprepes varius* (Ptrs.) = *Eu. olivierii* (Smith, Ptrs.), distinct from *Eu. vittatus* (Oliv.), p. 20.—*Euprepes bensonii*, sp. n., from Liberia, p. 20.—*Euprepes æneofuscus* (Ptrs.) = *Eu. blandingii* (Hallow.), p. 21.—*Euprepes* (*Tiliqua*) *semicinctus*, sp. n., from Mindanao, p. 21.—*Euprepes* (*Tiliqua*) *bicarinatus*, sp. n., from Hong-Kong, p. 22.

Euprepes. Dr. Steindachner includes in this genus *Eumeces*, *Mocoa*, *Hinulia* of Gray, and describes as new (Novara, Rept.) *Euprepes petersii*, p. 43, *Euprepes stolickai*, p. 45, *Euprepes kangilensis* and *blythi*, p. 46, all collected by Dr. Stoliczka in the Himalayas; *Euprepes novaræ*, p. 47, tab. 2. fig. 4, from Otaheiti and the Samoa Islands; *Euprepes macrotis*, p. 48, from the Nicobar Islands; and *Euprepes striatulus*, p. 49, from New South Wales.

Euprepes binotatus, sp. n., Bocage, Jorn. Sc. math. phys. e. nat. Lisboa, iii. p. 230, pl. 3. fig. 3, Benguella.

Euprepes aureopunctatus, sp. n., Grandidier, Rev. et Mag. Zool. 1867, p. 234. Supra nigro-brunneus; capite nuchaque flavis, dorso nigris punctis maculato. Cauda corpore concolori. Infra flavido-albus. Long. corporis caudæque 0m·08.—Madagascar.

Mocoa. Dr. Gray, Austral. Liz. pl. 7, figures *Carlia melanopogon*, fig. 1, *Mocoa microtis*, fig. 2, *M. ocellata*, fig. 3, *M. zelandica*, fig. 4, and *M. entrecastauxii*, fig. 5.

Lygosoma bougainvillii (D. & B.) has been described as *Lygosoma laterale* by Dr. Günther, Ann. & Mag. N. Hist. 1867, xx. p. 46.

Lygosoma (*Lipinia*) *semperi*, sp. n., Peters, Monatsber. Ak. Wiss. Berl. 1867, p. 18, Mindanao.

Lygosoma quadrivittatum, sp. n., Peters, *l. c.* p. 19, Mindanao. This may be the type of a distinct genus, *Cophoscincus*, having the eyelid non-transparent and the tympanum covered by scales.

Lygosoma (*Hinulia*) *variegatum*, sp. n., Peters, *l. c.* p. 20, Mindanao.

Lygosoma (*Hinulia*) *scutatum*, sp. n., Peters, *l. c.* p. 708, Pelew Islands.

Heteropus schmeltzii, sp. n., Peters, *l. c.* p. 23, Queensland.

Hemiergis polylepis, sp. n., Günther, *l. c.* p. 48, South Australia.

Soridia miopus, sp. n., Günther, *l. c.* p. 49, Champion Bay.

Rhodona. Dr. Günther (*l. c.* p. 46) describes two new species: *Rhodona*

gerrardii (= *Rh. punctata*, var. *gerrardii*, Gray) from West Australia, and *Rhodona punctatovittata* from Queensland.

Anomalopus godeffroyi, sp. n. ?, Peters, *l. c.* p. 24, East Australia.

Pygomeles, g. n., Grandidier, Rev. et Mag. Zool. 1867, p. 234. *Præpedito* similis, sed auribus minimis; corpore anguiformi; extremitatibus anterioribus nullis, posterioribus parvissimis, compressis indivisisque. Capite cuneato; dentibus conicis; palato edentato; lingua tota squamea, non transversim sulcata nec antice emarginata. Squamis non striatis.—*Pygomeles braconieri*. Supra argenteus; squamis dorsi laterumque puncto brunneo-nigro centrali notatis, his punctis decem vel duodecim lineas longitudinales formantibus. Infra albus. Capite nigro maculato. Long. e nasi apice ad basin caudæ 0m·14, caudæ 0m·09.—Madagascar.

Hemipodion, g. n., Steindachner, Sitzgsber. Ak. Wiss. Wien, 1867, lv. p. 263. Body and tail very long, limbs feeble, the anterior with three, the posterior with two toes. Nostril between two nasals; no supranasals. Ear externally not visible; eyelid with a transparent disk. Scales smooth. *H. persicum*, sp. n., taf. 1.

Mochlus afer = *Eumeces afer* (Ptrs.) = *Mochlus punctatus* (Gthr.) figured by Bocage, Jorn. Sc. math. phys. e nat. Lisb. iii. est. 3. fig. 2.

Mabouia macrura, sp. n., Günther, *l. c.* p. 48, Cape York.

Tropidolepisma. Dr. Gray, *l. c.*, figures *T. nitidum*, pl. 12, *T. kingii*, pl. 13, and *T. majus*, pl. 14.

Sepsidæ.

Gongylus igneocaudatus, sp. n., Grandidier, Rev. et Mag. Zool. 1867, p. 234. Supra brunneus; in lateribus flavidis, tribus lineis nigris, superiore latissima, inferiore tenuissima. Partibus inferioribus albis. Cauda perlucida rubra. Long. e nasi apice ad basin caudæ 0m·04, caudæ 0m·055.—Madagascar.

Typhlinidæ.

Typhloscincus (Ptrs.) is described by Dr. Steindachner as *Rhinophidium* (g. n.), Novara, Rept. p. 52; he recognizes their identity, p. 94, but thinks that the *Typhloscincus nicobaricus* (sp. n., pp. 53, 94, tab. 3. figs. 6–8) may be specifically distinct from *T. martensii*.

Iguanidæ.

Iguana tuberculata. Its myology described by Mr. St. G. Mivart, Proc. Zool. Soc. 1867, pp. 766–797, with numerous woodcuts.

Ophryoessoides dumerilii, sp. n., Steindachner, Novara, Rept. p. 33, tab. 2. fig. 5, from Para.

Agamidæ.

(*Tiaris*) *Lophyrus semperi*, sp. n., Peters, Monatsber. Ak. Wiss. Berl. 1867, p. 16, from the Philippines. [Prof. Peters is right in supposing that the *Tiaris bellii* of the British Museum is not identical with *Lophyrus bellii* (D. & B.); the former may be named *Tiaris petersii*.]

Coryphophylax, g. n., Steindachner, Novara, Rept. p. 29. Body compressed; scales keeled, unequal in size; neck and back with a crest; spines on the side of the occiput and neck. Anal and femoral pores absent. A fold across the throat; a gular sac. Tympanum distinct.—*Coryphophylax maximiliani*, sp. n., Steindachner, *l. c.* p. 30, taf. 2. fig. 6, from the Nicobar Islands. —The name is proposed by Dr. Fitzinger.

Bronchocœle. Prof. Peters gives the distinctive characters of *B. cristatella* (Kuhl) and *B. moluccana* (Less. & Garn.), and describes *Calotes (Br.) philippinus*, sp. n. Monatsber. Ak. Wiss. Berl. 1867, p. 16.

Lophura godeffroyi, sp. n., Peters, *l. c.* p. 707, fig. 1; type of a distinct subgenus, *Hypsilurus*. From the Pelew Islands.

Lophognathus gilberti figured by Gray, *l. c.* pl. 19. fig. 2. It is described by Dr. Steindachner as *Redtenbacheria fasciata* (g. et sp. n.), Novara, Rept. p. 31.

Diporophora bilineata figured by Gray, *l. c.* pl. 19. fig. 1.

Grammatophora. Dr. Steindachner describes a new species of this genus as *Calotella* (g. n.) *australis*. Novara, Rept. p. 29, tab. 1. fig. 9.—Dr. Günther mentions it as *Grammatophora calotella* from Cape York, Ann. & Mag. Nat. Hist. xx. p. 52.

Dr. Günther (*l. c.* pp. 51–52) describes three new species: *Grammatophora macrolepis* and *G. levis* from Champion Bay, and *G. temporalis* from Northwestern Australia.

Dr. Gray, Austral. Liz. pl. 18, figures *Grammatophora barbata*, fig. 1, *G. angulifera*, figs. 2 & 3, and *G. ornata*, fig. 4.

Tympanocryptis cephalus, sp. n., Günther, *l. c.* p. 52, Nicol Bay.

Stellio himalayanus, sp. n., Steindachner, Novara, Rept. p. 22, taf. 1. fig. 8.

Phrynocephalus stolickai is described by Dr. Steindachner as a new species (*l. c.* p. 23, tab. 1. figs. 6, 7) [but identical with *Phr. caudivolvulus*].

Chamæleonidæ.

Chamæleo cristatus. Dr. J. A. Smith has published notes of two examples in Proc. R. Phys. Soc. Edinb. 1864–65, p. 228.

Chamæleo fasciatus is described as a doubtfully new species from Old Calabar by Dr. J. A. Smith, *l. c.* pp. 306–308.

Geckotidæ.

Œdura. Dr. Gray, Austral. Liz., figures on pl. 16, *Œ. marmorata*, figs. 1 & 4, and *Œ. rhombifera*, fig. 6.

Strophura spinigera figured by Gray, *l. c.* fig. 5.

Rhynchoedura, g. n., Günther, Ann. & Mag. Nat. Hist. xx. p. 50. All the toes are compressed, rather slender, not dilated in any part, granular below, with feeble claws. Head and body with very small granule-like scales, without any tubercles; tail rounded, slightly swollen, covered with rings of small square plates. Snout pointed, peculiarly compressed; labial shields minute, front of upper jaw covered with a prominent, nail-like shield. Tongue narrow, rather pointed in front, not notched. Eye very large. Some larger shields, without pores, before and behind the vent.—*Rhynchoedura ornata* sp. n., from Nicol Bay.

Diplodactylus. Dr. Gray, *l. c.* pl. 15, figures *D. bilineatus*, fig. 3 = *D. ocellatus*, fig. 4, and *D. marmoratus*, fig. 6; and on pl. 16, *D. ornatus*, fig. 2, and *D. vittatus*, fig. 3.

Diplodactylus bilineatus (Gray) = *D. ocellatus* (Gray). Günther, Ann. & Mag. Nat. Hist. xx. p. 49.—*Diplodactylus polyophthalmus*, sp. n., Günther, *l. c.*, from West Australia.

Phyllodactylus androyensis, sp. n., Grandidier, Rev. et Mag. Zool. 1867, p. 233. Superne griseus, lateribus rubro-brunneis; in dorso quatuor paribus macularum reniformium, primo pare frenum attingente. Capite griseo, cum nigra macula. Infra albidus. Tuberculis triangularibus. Cauda brevi, in

turbinis forma, rugosa. Hypodactylis granulosis. Long. e nasi apice ad basin caudæ 0·035, caudæ 0m·02.—Madagascar.

Phyllodactylus anomalus, sp. n., Peters, Monatsber. Ak. Wiss. Berl. 1867, p. 14, Queensland.

Hemidactylus. Dr. Gray, *l. c.* pl. 15, figures *H. depressus*, fig. 1, *H. brookii*, fig. 2, and *H. vittatus*, fig. 5.

Hemidactylus (*Peripia*) *peronii* perhaps not distinct from *H. mutilatus* (Wiegm.). Peters, *l. c.* p. 14.

Hemidactylus sakalava, sp. n., Grandidier, Rev. et Mag. Zool. 1867, p. 233. Pollicibus non truncatis, lamellis hypodactylorum integris. Tuberculis rotundatis, numerosis, sparsis. Aculeis caudalibus per series transversales. Pallide cinereus, sex nigris fasciis dorsalibus obsoletis transversim notatus. Long. e nasi apice ad basin caudæ 0m·06, caudæ 0m·09.—Madagascar.

Gecko mœstus, sp. n., Peters, Monatsber. Ak. Wiss. Berl. 1867, p. 13, from the Pelew Islands.—*Gecko labialis*, sp. n., Peters, ibid. p. 14, from Mindanao.

Gecko grayi, sp. n., Steindachner, Novara, Rept. p. 11, New South Wales.—*Gecko albo-fasciolatus*, sp. n., Günther, *l. c.* p. 50, Polynesia?

Geckolepis, g. n., Grandidier, Rev. et Mag. Zool. 1867, p. 233. *Gecko* supra infraque squamis scincoïdiorum modo tectus. Capite obtuso, pedibus brevissimis. Digitis Platydactylorum modo striatis.—*Geckolepis typicus*. Supra rubro-ardesiacus, infra grisescens. Cauda depressa, in lateribus non denticulata. Corpore squamis rotundatis, imbricatis, cauda ovatis, omnibus punctis minutissimis nigris distinctis. Menti scutum acutum et in utroque latere duo in æqualia; postea squamæ dorsalibus similes. Long. e nasi apice ad basin caudæ 0m·04, caudæ 0m·04.—Madagascar.

Sphærodactylus copei is described as a new South-American species by Dr. Steindachner, Novar. Exped. Rept. p. 18, tab. 1. fig. 5.

Naultinus. Dr. Steindachner substitutes a new name made by Dr. Fitzinger, *Dactylocnemis*, for "*Naultinus pacificus*, Gray." Novara, Rept. p. 11.—*Naultinus pacificus* is figured, ibid. taf. 1. fig. 1.—Remarks on *Naultinus elegans*, ibid. p. 19, and *Naultinus punctatus*, p. 20.

Heteronota binoei (Gray) = *Eublepharis derbianus* (Gray). Günther, Ann. & Mag. Nat. Hist. 1867, xx. p. 50.—The same Lizard has been described by Dr. Steindachner as *Hoplodactylus australis*, sp. n., Novar. Rept. p. 18, pl. 1. fig. 2.

Geckoella, g. n., Gray, Proc. Zool. Soc. 1867, p. 98. Differs from *Homonota* and *Naultinus* in the back being tubercular, from *Eublepharis* in having no præanal pores and in the pupil being vertical.—*Geckoella punctata*, sp. n., Gray, *l. c.* p. 99, pl. 9, from Ceylon.

Gymnodactylus girardi, sp. n., Steindachner, Novara, Rept. p. 15, pl. 2. fig. 3.—Hab. ——?—*Gymnodactylus stolickai*, sp. n., Steindachner, *l. c.* pl. 2. fig. 2, from Karoo, north of Dras.—*Gymnodactylus maculatus*, sp. n., Steindachner, *l. c.* p. 16, pl. 1. fig. 4, West Indies?—*Gymnodactylus philippinicus*, sp. n., Steindachner, *l. c.* p. 17, pl. 2. fig. 1.

Phyllurus. Dr. Gray, *l. c.* pl. 17, figures *Ph. inermis*, fig. 1, *Ph. miliusii*, fig. 2, and *Ph. platurus*, fig. 3.

Spatalura collaris is described as a new species by Dr. Steindachner, Novara, Rept. p. 20. Habitat ——? [It may be remarked that *Sp. carteri*, to which the new species is said to be closely allied, is known from dried examples only.]

OPHIDIA.

Typhlopidæ.

Typhlops wiedii, sp. n., Peters, Monatsber. Ak. Wiss. Berl. 1867, p. 24, Brisbane.

Typhlops petersii is described as a new species by Steindachner, Verh. zool.-bot. Ges. Wien, 1867, p. 515, Taf. 13. figs. 7–9, from the Philippine Islands.

Typhlops (*Onychocephalus*) *unguirostris*, sp. n., Peters, *l. c.* p. 708, fig. 3, from Queensland.

Stenostoma narirostre, sp. n., Peters, *l. c.* p. 708, fig. 2, Lagos.

Uropeltidæ.

Plectrurus sanguineus, sp. n., Beddome, Madras Quart. Journ. Med. Sc. 1867, p. 14, pl. 1. fig. 2, Anamallay Forest.

Plectrurus? trilineatus, sp. n., Beddome, *l. c.* pl. 1. fig. 1, Anamallay Forest. [This is the type of *Platyplectrurus*, Gthr.]

Silybura rubromaculata, sp. n., Beddome, *l. c.* p. 15, pl. 2. fig. 3, and [*Silybura*] *Rhinophis grandis*, sp. n., Beddome, pl. 2. fig. 4, from the Anamallay Forest.

Calamaridæ.

Calamaria philippinica, sp. n., Steindachner, Verh. zool.-bot. Ges. Wien, 1867, p. 514, Taf. 13. figs. 4–6.

Geophidium (Wiegm.) = *Colobognathus* (Ptrs.). Peters, Monatsber. Ak. Wiss. Berl. 1867, p. 235.

Calamelaps (Gthr.)=*Amblyodipsas* (Ptrs.)= ? *Choristodon* (A. Smith), according to Peters, *l. c.*

Toluca (Kennicott) = *Conopsis* (Gthr.) = *Oxyrhina* (Jan), according to Peters, Monatsber. Ak. Wiss. Berl. 1867, p. 235.

Bergenia, g. n., Steindachner, Novara, Rept. p. 92. Rostral prominent. Nasals two, the anterior forming a suture together behind the rostral, replacing the anterior frontals; loreal none. Eyes small. Scales smooth, in 17 rows. Subcaudals and anal bifid. Tail short. Posterior maxillary tooth rather longer than the others, separated from them by a short interspace. —*Bergenia mexicana*, sp. n., Steindachner, *l. c.*—Ventrals 158.

Temnorhynchus. Prof. Peters states that *Prosymna* (Gray) is identical with this genus, and *Rhinostoma cupreum* (Gthr.) with *Temnorhynchus sundevallii* (Smith). Monatsber. Ak. Wiss. Berl. 1867, p. 235. He describes as a new species *Temnorhynchus frontalis*, from Otjimbingue, p. 236, with a plate.

Oligodontidæ.

Simotes brevicauda, sp. n., Steindachner, Novara, Rept. p. 61, taf. 3. figs. 13–14, from Cochinchina.

Colubridæ.

Messrs. Jan & Sordelli (*l. c.*) have figured the following species :—

No. 20. plate 1. *Rhinechis scalaris*. Pl. 2. [*Zamenis diadema* under the

erroneous name of] *Periops parallelus*. Pl. 3. *Toxodon microlepis*. Pl. 4. *Plagiodon helena* and *erythrurus*. Pl. 5. *Bothrophthalmus melanozostus*, sp. n., Schleg. [probably = *B. brunneus*, var.]. Pl. 6. *Masticophis flagelliformis* (Holbr.), with var. *testacea* (Say).

No. 21. plate 1. *Elaphis virgatus*. Pl. 2. *Elaphis sauromates*. Pl. 3. *Elaphis dione*. Pls. 4 & 5. *Elaphis melanurus*, with variety. Pl. 6. [*Coluber*] *Elaphis guttatus*, with variety.

No. 22. plate 1. *Pituophis melanoleucus*. Pl. 2. *Pituophis mexicanus* and *deppii* [an spec. distinctæ?]. Pls. 3 & 4. *Coryphodon constrictor*. Pl. 5. *Masticophis tæniatus*. Pl. 6. [*Zamenis*] *Masticophis mexicanus* and *Masticophis bilineatus*, sp. n., Jan, from Mexico.

No. 23. plate 1. *Zamenis caspicus*. Pl. 2. *Zamenis persicus*, sp. n., Jan [probably = *Z. chesneï*], and *Zamenis cataphoronotus*, sp. n., from Bangkok [?]. Pl. 3. *Zamenis caudolineatus*. Pl. 4. *Dromicus ater*. Pl. 5. *Dromicus cursor*. Pl. 6. *Dromicus angulifer*.

No. 24. plate 1. *Elaphis quadrivirgatus* and *Coluber æsculapii*. Pl. 2. *Coluber alleghaniensis*. Pl. 3. *Coryphodon pantherinus* and *Ptyas blumenbachii*. Pl. 4. [*Zaocys nigromarginatus* under the erroneous name of] *Coryphodon dhumnades*, and *Ptyas korros*. Pl. 5. *Dromicus plei*, fig. 1; *D. amabilis* (Jan), fig. 2; *D. melanostigma* (Wagl.), fig. 3. Pl. 6. *D. nuntius* (Jan), fig. 1; *D. unicolor*, fig. 2; *D. putnami* (Jan), fig. 3; *D. lineatus*, fig. 4. Great caution is necessary in adopting these determinations of the *Dromici*, the authors having been quite incapable of determining the numerous species of this genus whenever they had no authenticated specimens for the use of their work.

Chilomeniscus ephippicus, sp. n., Cope, Proc. Ac. Nat. Sc. Philad. 1867, p. 85, from Owen's valley, California.

Psammophylax rhombeatus. Dr. Bocage has received an example from Benguella, which he refers with doubt to this species. It has the coloration of *Ps. rhombeatus*, but the cephalic shields of *Coronella multimaculata*. Jorn. Sc. Math. Phys. e Nat. Lisboa, iii. p. 224.

Liophis pulcher, sp. n., Steindachner, Sitzgsber. Ak. Wiss. Wien, 1867, lv. p. 265, taf. 2, from Chile.

Liophis reginæ. Dr. Steindachner describes a variety, ibid. p. 266.

Coluber æsculapii. Skeleton described by Giebel, Zeitschr. ges. Ntrwiss. 1867, xxix. p. 418.

Spilotes variabilis. Skeleton described by Giebel, *l. c.*

Spilotes corais. Dr. Steindachner describes this most common snake as *Geoptyas flaviventris*, sp. n., *l. c.* p. 270, taf. 4; and the variety named by Duméril and Bibron *Sp. melanurus*, as a second supposed new species, *Geoptyas collaris*, p. 269, taf. 3. figs. 4–7.

Zamenis himalayanus, sp. n., Steindachner, Verhandl. zool.-bot. Ges. Wien, 1867, p. 513, taf. 13. figs. 1–3, from Simla and Kulu.

Dromicus chilensis, sp. n., Steindachner, Sitzgsber. Ak. Wiss. Wien, 1867, lv. p. 268, taf. 3. figs. 1–3.—Scales in 23 rows.

Heterodon histricus, var. (Steindachner, 1864), is named *Heterodon nattereri*, Steindachner, Novara, Rept. p. 90.

Homalopsidæ.

Tachyplotus, g. n., *opisthoglyphum*. Scales smooth, in 25 series; labial

shields ten, none entering the orbit. Præfrontal minute, single, separated from the rostral by the nasals; loreals two, one præ- and one infraocular. *Tachyplotus hedemanni*, sp. n., Reinhardt, Vid. Medd. nat. Foren. Kjöbenh. 1866, p. 151, with figure.—From Biliton.

Helicops assimilis, sp. n., Reinhardt, *l. c.* p. 156, Lagoa Santa. [Through the author's kindness, I have been enabled to compare a specimen of this snake with *H. modestus*; and I think that he was quite right in regarding it as a distinct species.]

Hydrodipsas (Ptrs.) = *Cantoria* (Girard). This observation, made by Mr. Cope, is confirmed by Reinhardt, *l. c.* p. 151.

Dendrophidæ.

Dendrophis striolatus, sp. n., Peters, Monatsber. Ak. Wiss. Berl. 1867, p. 25, Pelew Islands.—*Dendrophis calligaster*, sp. n., Günther, Ann. & Mag. Nat. Hist. xx. p. 53, from Cape York.

Ahætulla polylepis, sp. n., Peters, *l. c.* p. 709, from Surinam.—Scales in 23 series.

Dryiophidæ.

Dryiophis kirtlandii (Hallow.) = *Thelotornis capensis* (Smith) = *Cladophis* (A. Dum.), Peters, Monatsber. Ak. Wiss. Berl. 1867, p. 235.

Tragops prasinus. Prof. Peters has discovered keeled scales in the sacral region, and thinks the validity of the genus *Tropidococcyx* to be doubtful. *L. c.* p. 25. [This genus is characterized by the shields of the head being different from those of *Tragops*.]

Tragops javanicus, sp. n., Steindachner, Novara, Rept. p. 72, tab. 3. fig. 15 (head), from Java [and Pegu].

Psammophididæ.

Psammophis moniliger. Prof. Peters describes three varieties: *furcatus*, *bilineatus*, and *notostictus*. Monatsber. Ak. Wiss. Berl. 1867, p. 236.

Psammophis mahfalensis is characterized as a new species by Grandidier in Rev. et Mag. Zool. 1867, p. 234, thus: Supra brunneo-griseus, lineis 2 nigris dorsalibus angulatis. Infra grisescens.—From Madagascar.

Psammodynastes pulverulentus is described by Dr. Steindachner as *Lycodon bairdii*, sp. n. Novara, Rept. p. 90.

Dipsadidæ.

Dipsas. Prof. Peters (*l. c.*) describes *Dipsas drapiezii*, var. *bankana*, p. 26; *Dipsas philippina*, sp. n., p. 27; and *Dipsas hoffmanseggii*, sp. n., from Java, p. 27.—*Dipsas* (*Eudipsas*) *guiraonis*, sp. n., Steindachner, Novara, Rept. p. 75, tab. 3. figs. 9, 10 (head), from the Philippine Islands.

Lycodontidæ.

Lycophidium bipunctatum (Ptrs.) proves to be identical with *Leptorhytaon jara*, Peters, Monatsber. Ak. Wiss. Berl. 1867, p. 236. The author says that *Leptorhytaon* ought not to be separated from *Lycophidium*.

[*Boodon*] *Alopecion variegatum*, sp. n., Bocage, Jorn. Sc. math. phys. e nat. Lisb. iii. p. 230, pl. 3. fig. 4, from Benguella. [The Recorder has convinced himself that this is a *Boodon*.]

Boidæ.

Homalochilus striatus. Remarks on the literature by Steindachner, Novara, Rept. p. 57.

Elapidæ.

Diemenia. Dr. Steindachner unites [erroneously] *D. olivacea* (Gray) with *D. psammophis*, Novara, Rept. p. 80. [The latter has quite a different physiognomy, is much more elongate, comes from a different locality, &c.] He describes also *D. superciliosa* (Fisch.) as *Cacophis güntheri* (sp. n.), ibid. p. 91.

Pseudonaja nuchalis. Prof. M'Coy doubts the distinctness of this snake from *Diemenia superciliaris*, Ann. & Mag. Nat. Hist. xx. p. 182. [We doubt whether he has ever seen it, as it occurs in North-west Australia. It appears to be very rare, the British Museum alone possessing some examples.]

Pseudechis scutellatus, sp. n., Peters, Monatsber. Ak. Wiss. Berl. 1867, p. 710, from Rockhampton.

Hoplocephalus maculatus, sp. n., Steindachner, Novara, Rept. p. 81, tab. 3. figs. 3–5, from New South Wales [probably Queensland].—*Hoplocephalus fuscus*, sp. n.?, Steindachner, *l. c.* p. 82, tab. 3. figs. 11, 12, New Holland. Scales in 15 series; ventrals 177.

Naja nigricollis (Rnhrdt.) = *N. mossambica* (Ptrs.). Peters, *l. c.* p. 237.

Atractaspis bibronii. On variations in the squamation see Bocage, Jorn. Sc. math. phys. e nat. Lisboa, iii. p. 227.

Callophis cerasinus is described as a new species by Beddome, Madras Quart. Journ. Med. Sc. 1867, p. 16, pl. 2. fig. 5, from the Malabar Forests.

Crotalidæ.

Tropidolæmus hombroni has sometimes the scales in 21 series. Peters, Monatsber. Ak. Wiss. Berl. 1867, p. 29.

Trimeresurus labialis, sp. n., Steindachner, Novara, Rept. p. 86, taf. 3. figs. 1 & 2, from the Nicobar Islands.

Viperidæ.

Vipera aspis. E. de Betta describes and figures a case of a double-headed monstrosity. Att. Ist. Venet. Sc. Lett. & Art. x. pp. 916–925.

PSEUDOPHIDIA.

Siphonops kaupii (Berthold) is described by Dr. Keferstein, and compared with *S. indistinctus* (Reinh. & Lütk.). Götting. Nachricht. 1867, p. 361.—Some notes on *S. indistinctus* by Dr. Hensel, Wiegm. Arch. 1867, p. 162.

BATRACHIA SALIENTIA.

Mr. E. D. Cope has continued his researches into the anatomical, and especially the osteological structure of the tailless Batrachians, which we have previously mentioned in 'Zool. Record,' ii. p. 156. He has paid particular attention to the tribe which he has named *Arcifera*, and published the results of his investigations in Journ. Ac. Nat. Sc. Philad. 2nd ser. v. pp. 67–97. The chief osteological characters on which the author has based

his division of these animals are contained in our former abstract; and for the additional anatomical detail (different manner of attachment of the integuments to the muscles in the different groups, some short remarks on the structure of internal organs) we must refer to the paper itself. Of the families, groups, and genera, distinctive diagnoses are given, and tables are added showing the affinities of the genera and their geographical distribution. The author states that 265 species, or 69 genera, are known; he divides them now into seven familes, instead of five, as in his former paper. The arrangement is the following:—

1. Discoglossidæ remain unchanged; a new fossil genus, *Zaphrissa*, is added.

2. Asterophrydidæ unchanged, *Leptobrachium* excluded.

3. Pelodytidæ includes *Leptobrachium* and *Pelodytes*.

4. Scaphiopodidæ are rearranged.

a. *Cultripes*, *Pelobates*, *Didocus* (g. n. for *Rana calcarata*, Michah.).

b. *Scaphiopus*, *Spea* (g. n. for *Scaphiopus bombifrons*, Cope, &c.).

5. Hylidæ are not essentially changed; *Triprion* (Cope) and *Pithecopus* are added.

6. Hemiphractidæ, with *Hemiphractus*.

7. Cystignathidæ.

a. Pseudes: *Pseudis*, *Lysapsus*, *Mixophyes*, *Pithecopsis*, *Calyptocephalus*.

b. Ceratophrydes: *Chiroleptis*, *Tomopterna*, *Ceratophrys*, *Stombus* (g. n. for *Ceratophrys boiei*), *Zachænus* (g. n. for *Cystignathus parvulus*, Girard), *Limnomedusa* (g. n., for *Cystign. macroglossus*), ? *Nattereria*.

c. Criniæ: *Helioporus*, *Neobatrachus*, *Platyplectrum*, *Cyclorhamphus*, *Hyperolia*, *Borborocœtes* (including *Limnodynastes*), *Crinia*, *Eusophus*, *Alsodes*.

d. Pleurodemæ: *Pleurodema*, *Liuperus*, *Hylorhina*.

e. Hylodes: *Enhydrobius* (includes *Elosia*), *Epirhexis* (g. n., for *Batrachyla longipes*, Baird), *Phyllobates* (with *Crossodactylus*), *Limnocharis*, *Lithodytes*, *Hylodes*.

f. Cystignathi: *Gomphobates*, *Tarsopterus*, *Cystignathus*, *Gnathophysa*.

During the progress of his researches, the author has discovered some other (in his opinion) important characteristics of the structure of the metacarpals and phalanges of certain of these genera, which have necessitated another change in the arrangement of the *Hylæ*. He recognizes now only five genera, viz. *Centrotelma*, *Hyla* (including *Litoria*), *Cinclidium*, *Hypsiboas*, and *Calamita*. *L. c.* vi. p. 199.

In a second paper (*l. c.* vi. pp. 189–199) the author treats of the families of "*Raniform Anura*" in a similar manner, considerably modifying the arrangement previously proposed. Continued researches have led him to the result that the dentition does not separate the *Bufoniformia* from the *Raniformia*, and consequently that the families must be amalgamated. On the other hand, the genus *Hemisus* becomes the type of a distinct tribe, *Gastrechmia*, characterized thus:—Eustachian tubes not

roofed by pterygoids, tongue present; coracoids abutting, no arched cartilages; a "postcoracoid;" suprascapula having a ligamentous articulation with proötic.

RANIFORMIA.

I. *Bufonoid Raniformia.*

1. Brevicipitidæ: *Breviceps.*

2. Engystomidæ: *Phrynomantis, Microhyla, Callula, Systoma* (Tsch. = *Cacopus*, Gthr.), *Engystoma* (including *Diplopelma*), *Adenomera.*

3. Phryniscidæ: *Calophrynus, Copea, Atelopus, Phrynidium, Rhinoderma, Phryniscus, Brachycephalus.*

4. Dendrobatidæ: *Dendrobates.*

II. *Ranoid Raniformia.*

5. Colostethidæ: *Colostethus.*

6. Ranidæ, with the genera mentioned in Zool. Rec. ii. p. 159.

GASTRECHMIA.

1. Hemisidæ: *Hemisus.*

Aglossa.

Dactylethra. Dr. Steindachner retains *D. mülleri* as a species distinct from *D. lævis.* Novara, Amphib. p. 4.

Ranina.

Phrynoglossus, g. n., Peters, Monatsber. Ak. Wiss. Berl. 1867, p. 29, distinguished from *Oxyglossus* by the tongue being nearly entirely grown to the bottom of the mouth. *Ph. martensii*, sp. n., Peters, *l. c.*, from Bangkok. The author observes that *Oxyglossus lævis* (Gthr.) belongs to this genus, and that *O. lima* has a parotoid gland.

Pyxicephalus cordofanus, sp. n., Steindachner, Novara, Amphib. p. 8.

Rana. Dr. Steindachner describes, beside several common species, *Rana porosissima* from Angola as new, *l. c.* p. 18, and figures *Rana tigrina*, taf. 1. figs. 14–17.

Rana anchietæ, sp. n., Bocage, Proc. Zool. Soc. 1867, p. 843, c. fig., from Benguella.

Rana temporaria. Notice of a case of polymely, by Giebel, Zeitschr. ges. Ntrwiss. xxix. p. 504. The same author mentions a *Bombinator igneus* with one hind leg only.

Hoplobatrachus reinhardtii, sp. n., Peters, Monatsber. Ak. Wiss. Berl. 1867, p. 711, East Indies.

Ceratophrys boiei. Dr. Hensel describes a half-grown example. Wiegm. Arch. 1867, p. 121.

Cystignathus. Dr. Steindachner describes *C. ocellatus, C. labyrinthicus, C. typhonius*, and, as a new species, *C.* (*Eupsophus*) *fuliginosus* from Rio Janeiro, Novara, Amphib. p. 25, taf. 1. figs. 18–22.—Dr. Hensel (Wiegm. Arch. 1867) gives very detailed descriptions of *Cystignathus ocellatus*, p. 123, *C. mystaceus* (Spix), which is not identical with *C. ocellatus*, p. 125, and *C. gracilis* (D. & B.), p. 130.

Pleurodema bibronii. Dr. Hensel is inclined to regard the varieties of this

frog as specifically distinct, in accordance with their different habitats, *l. c.* p. 133.

Gomphobates. Dr. Steindachner treats again of the species of this genus, correcting some of the errors of his previous accounts (see Zool. Record, i. p. 128). He acknowledges the identity of "*Leiuperus ephippifer*" with *Gomphobates kröyeri*, but continues to think *Eupemphix fuscomaculatus* to be distinct from *Pleurodema bibronii*, Novara, Amphib. pp. 11–13.—Dr. Hensel describes three frogs, which he provisionally refers to the three species of *Gomphobates* described by Reinhardt & Lütken, Wiegm. Arch. 1867, pp. 137–139.

Limnodynastes. Dr. Steindachner describes *L. tasmaniensis*, *L. krefftii*, and, as a new species, *L. salmini* [which does not appear to be distinct from *L. krefftii*], *l. c.* p. 27, taf. 4. figs. 12–15.—Dr. Keferstein describes *Limnodynastes peronii*, Götting. Nachricht. 1867, p. 343, and certainly goes too far in regarding *L. tasmaniensis* (from Van Diemen's Land!), *krefftii*, and *dorsalis* as varieties.

Limnodynastes ornatus is described by Dr. Steindachner as *Opisthodon frauenfeldi* (g. et sp. n.), Novara, Amphib. p. 9, pl. 1. figs. 1–4. Günther, Ann. & Mag. Nat. Hist. xx. p. 54.

Limnodynastes dumerilii (Ptrs.) is described by Dr. Steindachner as *Heliorana grayi* (g. et sp. n.), *l. c.* p. 32, taf. 2. figs. 11–14.

Limnodynastes platycephalus, sp. n., Günther, Ann. & Mag. Nat. Hist. xx. p. 54, from Adelaide.

Crinia ignita, *stolata*, and *stictiventris* are described as new species by Mr. Cope, from West Australia, the first in Journ. Ac. Nat. Sc. Philad. v. p. 94, the two last ibid. vi. pp. 201, 202.

Crinia georgiana. Dr. Keferstein describes this species, *l. c.* p. 347, and regards *Cr. varia* (Ptrs.) as a variety [with which we cannot agree].

Platyplectrum. Dr. Keferstein describes three species of this genus, *l. c.* pp. 345, 346, viz. *Pl. marmoratum* (Gthr.), *Pl. ornatum* [this appears to be different from *Limnodynastes ornatus*, Gray], and *Pl. superciliare*, sp. n., from Australia.—*Platyplectrum occidentale* is described as a new species by Mr. Cope, Journ. Ac. Nat. Sc. Philad. v. p. 90, from West Australia.

Liuperus falcipes, sp. n., Hensel, Wiegm. Arch. 1867, p. 134, South Brazil.

Chiroleptes australis (Gray) is described by Prof. Peters as *Phractops alutaceus* (g. et sp. n.), Monatsber. Ak. Wiss. Berlin, 1867, p. 30, and by Dr. Steindachner as *Cyclorana novæ-hollandiæ* (g. et sp. n.), Novara, Amphib. p. 20, taf. 2. figs. 7–10.

Chiroleptes inermis, sp. n., Peters, *l. c.* p. 30, from Queensland.—*Chiroleptes alboguttatus*, sp. n.? (an = *Ch. inermis*, Pts.?). Günther, Ann. & Mag. Nat. Hist. xx. p. 54, from North Australia.

Grypiscus, g. n., *Discoglossid.*, Cope, Journ. Ac. Nat. Sc. Philad. vi. p. 205. Mandible with a series of caducous teeth, and a permanent elevated tooth on each side of the symphysis.—*G. umbrinus*, sp. n., p. 206, from Rio de Janeiro.

Pterophrynus fasciatus, sp. n., Steindachner, Novara, Amphib. p. 31, taf. 5. figs. 3, 4.—The same author figures *Pterophrynus varius* (Ptrs.), taf. 2. figs. 1–6.

Bombinatorina.

Liopelma hochstetteri, Fitzinger, Verh. zool.-bot. Ges. Wien, 1861, p. 218, taf. 6, is redescribed by Dr. Steindachner, Novara, Amphib. p. 33.

Brachycephalina.

Pseudophryne bibronii figured in Novara, Amph. taf. 5. figs. 1, 2.

Bufonina.

Atelopus varius described by Keferstein, Götting. Nachricht. 1867, p. 350.

Diplopelma pulchrum figured in Novara, Amph. taf. 2. figs. 15, 16.

Diplopelma (*Engystoma*) *berdmorei* (Blyth) is described as *Callula natatrix*, sp. n., by Mr. Cope, Journ. Ac. Nat. Sc. Philad. vi. p. 192.—The genus *Callula*, as defined by Mr. Cope, embraces species both aquatic and terrestrial!

Diplopelma disciferum, sp. n., Peters, *l. c.* p. 36, Java.

Hypopachus, g. n., Keferstein, Götting. Nachricht. 1867, p. 351, distinguished from *Engystoma* by having a clavicle, and the metatarsus provided with a large spur-like tubercle interiorly, and a smaller flat one exteriorly.—*Hypopachus seebachii*, sp. n., p. 352, from Costa Rica.

Adenomera, g. n., Steindachner, Novara, Amph. p. 37. Toes free; tongue narrow, not notched; a tympanum; a large flat gland in the loin; teeth none; apophyses of sacral vertebra dilated, triangular.—*Adenomera marmorata*, sp. n., Steindachner, *l. c.* p. 37, taf. 3. figs. 5–8, from Brazil. The name was formed by Dr. Fitzinger.

Chelydobatrachus gouldii. Prof. Peters states that *Myobatrachus* is founded on an example of this species. Monatsber. Ak. Wiss. Berl. 1867, p. 37.

Calophrynus pleurostigma, var. *sinensis*, Peters, Monatsber. Ak. Wiss. Berl. 1867, p. 33, from Hongkong.

Bufo. Dr. Steindachner (Novara, Amphib. pp. 39–47) describes, beside fourteen of the common species of this genus, one as new, viz. *Bufo spinipes* from the Nicobars (p. 43, tab. 5. figs. 6, 7). [This is identical with *Bufo gymnauchen*, Blkr.] He thinks that *B. rubropunctata* (Gay) is the young of *B. chilensis*, and that *B. galeatus* (Gthr.) is identical with *B. celebensis* (Schleg.).

Dr. Hensel (Wiegm. Arch. 1867, pp. 141–149) describes six species, which he determines as *B. d'orbignyi* (D. & B.), *B. agua*, *B. arenarum*, sp. n., p. 143, from Rio Grande do Sul, *B. dorsalis* (? Spix), *B. ornatus* (Spix), and *B. melanotis* (D. & B.?). He says that, to determine the species correctly, it will be necessary to examine the typical examples.

Bufo sternosignatus (Gthr.) and *Bufo hæmatiticus* (Cope) described by Dr. Keferstein, Götting. Nachricht. 1867, pp. 352, 353.

Bufo spinosus, sp. n.?, Bocage, Proc. Zool. Soc. 1867, p. 845, Benguella.

Hylina.

Hylorana. *Rana cæruleopunctata* (Steind.) proves to belong to this genus, and to be closely allied to *H. malabarica*. Steindachner, Novara, Amphib. p. 48.

Ixalus acutirostris, sp. n., Peters, Monatsber. Ak. Wiss. Berl. 1867, p. 32, Mindanao.

Leptomantis, g. n., Peters, *l. c.* p. 32, distinguished from *Ixalus* in having the fingers webbed, and the first finger opposed to the others. *L. bimaculata*, sp. n., from Mindanao.

Rappia. Dr. Steindachner (Novara, Amphib.) describes as new *Hyperolius bocagei* from Angola, p. 51, taf. 5. fig. 11, and *Hyperolius idæ* from Madagascar, p. 52, pl. 5. fig. 10.—*Hyperolius insignis*, sp. n., Bocage, Proc. Zool. Soc. 1867, p. 844, c. fig., from Benguella.—*Hyperolius toulsonii*, sp. n., Bocage, *l. c.* p. 845, c. fig., from Loanda.—*Staurois acridoides*, sp. n., Cope, Journ. Ac. Nat. Sc. Philad. vi. p. 198, from Zanzibar.

Crossodactylus. Dr. Hensel states that *Tarsopterus* (Reinh. & Lütk.) is identical with this genus. Wiegm. Arch. 1867, p. 149.

Phyllobates melanorhinus (Berthold) described by Dr. Keferstein, Götting. Nachricht. 1867, p. 354.

Phyllobates glandulosus, sp. n., Steindachner, Novar. Amphib. p. 53, tab. 3. figs. 1–4, from Brazil.—*Phyllobates peruensis*, sp. n., Steindachner, *l. c.* tab. 4. figs. 8–11, from Peru.

Hylodes güntheri is redescribed by Steindachner, *l. c.* p. 53, tab. 4. figs. 1–7, from Rio Janeiro.

Litoria latopalmata, sp. n., Günther, Ann. & Mag. Nat. Hist. xx. p. 55, from Port Denison.—*Litoria mystacina*, sp. n., Keferstein, Götting. Nachricht. 1867, p. 356, from Australia.—*Litoria copei* is described as a new species by Dr. Steindachner, Novara, Amphib. p. 56, taf. 3. figs. 14–17, from New South Wales [perhaps = *L. wilcoxii*].

Hyla. Dr. Günther describes two new species from Cape York, *H. infrafrenata* and *H. nigrofrenata*. Ann. & Mag. Nat. Hist. xx. p. 56.

Dr. Steindachner (Novara, Amphib. pp. 57–62) describes several well-known species of this genus, *Hyla castanea* as new (p. 62, taf. 3. figs. 9–13), hab. —? He figures *Hyla venulosa*, taf. 3. fig. 18, and states that the typical specimen of *Hyla spinosa* is a female (see Zool. Record, i. p. 131).

Dr. Hensel describes five species of this genus collected by him in Southern Brazil, Wiegm. Arch. 1867, pp. 154–161 :—*Hyla mesophæa*, sp. n., p. 154 ; *H. maxima*, *H. vautieri*, *H. rubicundula* (Rhdt. & Ltk.), and *H. bracteator*, sp. n., p. 159.

Hyla coriacea, sp. n., Peters, Monatsber. Ak. Wiss. Berl. 1867, p. 711, Surinam.—*Cinclidium granulatum* is described as a new species by Cope, Journ. Ac. Nat. Sc. Philad. vi. p. 202, Surinam.—*Centrotelma cryptomelan*, sp. n., Cope, *l. c.* p. 204, Bahia.

Hyla prasina. Dr. Giebel states that this species is certainly not identical with *H. pulchella*, but perhaps with *H. agrestis*. He describes also the skeleton. Zeitschr. ges. Ntrwiss. xxix. pp. 28–32. [*H. agrestis* is quite distinct from *H. prasina*.]

Hyla holochroa (Salvin) proves to be identical with *H. morelettii* (Dum.). Keferstein, Götting. Nachricht. 1867, p. 356.

Pohlia, g. n., Steindachner, Novara, Amphib. p. 15, is said to be distinguished from *Rana* in having the first finger opposite to the others ; from *Pseudis* in having the tongue deeply notched, and the vomerine teeth in two widely separate groups. *Pohlia palmipes*, sp. n., Steindachner, *l. c.* taf. 1. figs. 5–8, from Matogrosso.—According to Mr. Cope, *Pohlia* is probably *Ranula* (Ptrs.), as defined by himself, Journ. Ac. Nat. Sc. Philad. vi. p. 201. [Having recently received an example of this *Pohlia palmipes* from Pebas, I find that the genus is Hyloid, the dilatations of the hind toes being small, but very distinct. The apophysis of the sacral vertebra is dilated. The first finger is *not* opposed to the others.]

Ololygon, g. n., Steindachner, *l. c.* p. 64, distinguished from *Hyla* by the absence of a web between the toes ; disks inconspicuous ; male without gular sac. *Ololygon abbreviatus*, sp. n., Steindachner, *l. c.* p. 65, taf. 4. figs. 16–19, from Brazil.—The same frog is described by Dr. Hensel in Wiegm. Arch. 1867, p. 151, who, not paying regard to the form of the transverse process of the sacral vertebra, refers it to *Hylodes*.—Mr. Cope remarks that the frog described by Dr. St. is not *Hyla abbreviata* (Spix), which is a Cystignathoid of the genus

Enhydrobius (Wagl.), and that *Ololygon* is very near to *Thoropa* (Cope), if not the same. Journ. Ac. Nat. Sc. Philad. vi. p. 201.

Triprion petasatus. Head and skull figured by Mr. Cope, Journ. Ac. Nat. Sc. Philad. v. pl. 25. figs. 7 & 8.

Pelodryas cæruleus. Mr. Cope names the yellow-lipped variety from Amboyna (quære Ceram?) *Calamita dolichopsis*, *l. c.* vi. p. 204.

Chirodryas, g. n., Keferstein, Götting. Nachricht. 1867, p. 358, distinguished from *Pelodryas* by its raniform habit, small disks, tubercular back, &c. *Ch. raniformis*, sp. n., from Australia.

Hylaplesiina.

Calohyla sundana, sp. n., Peters, Monatsber. Ak. Wiss. Berl. 1867, p. 34, Pontianak.

Phrynomantis (name proposed for *Brachymerus*, which is preoccupied) *fusca*, sp. n., Peters, *l. c.* p. 35, from Amboyna.

Hylaplesia. Dr. Keferstein states that *Dendrobates histrionicus* (Berthold) is not distinct from *D. tinctorius*, Götting. Nachricht. 1867, p. 359, and describes as new *Dendrobates typographus*, from Costarica, p. 360.—*Hylaplesia brevipes*, sp. n., Peters, *l. c.* p. 34, Zamboanga.

BATRACHIA GRADIENTIA.

Mr. E. D. Cope's paper "On the Osseous Structures of the Types of the *Urodela*" commences with general remarks on the relation of developmental characters to systematic zoology, and concludes with a sketch of the characters of the great zoological regions. He gives the principal osteological characters of each of the following groups and families (Journ. Ac. Nat. Sc. Philad. v. pp. 97–112) :—

A. Trachystomata (Müll.).
  Fam. *Sirenidæ*: Siren.
B. Proteida (Müll.).
  Fam. *Proteidæ*: Proteus & Necturus.
C. Caducibranchiata.
  Fam. *Amphiumidæ*: Amphiuma and Murænopsis.
  „ *Protonopsidæ*: Protonopsis and Megalobatrachus.
  „ *Amblystomidæ*: Amblystoma, Ensatina, and Onychodactylus.
  „ *Plethodontidæ*: Plethodon, Hemidactylium, Spelerpes, Geotriton, and Batrachoseps.
  „ *Desmognathidæ*: Desmognathus.
  „ *Hynobiidæ*: Hynobius.
  „ *Salamandridæ*: Salamandra and Triton.
  „ *Pleurodelidæ*: Hemisalamandra, Neurergus, Lissotriton, Lophinus, Euproctus, Cynops, Neurophthalmus, Pleurodeles, Glossolega, Siranota.

Prof. Leydig has written on the *Salamandrina* of Würtemberg (*Triton* and *Salamandra*), Wiegm. Arch. 1867, pp. 863–182. He distinguishes four species of the former genus, viz. *T. cristatus*, *T. alpestris*, *T. tæniatus*, and *T.*

helveticus= *T. palmatus*; and two of the latter, *S. maculosa* and *S. atra*. He treats of their propagation, development, of the histology of the skin, the skull, and dentition (which is not uniserial). A great part of the paper is devoted to a review of the literature as far as it is known to the author. The paper is illustrated by three plates (pl. 4 representing *T. tæniatus* and *helveticus*), and ought to be studied by all interested in the study of tailed Batrachians. [The author is wrong in denying the fact that the ribs of adult *Pleurodeles* perforate the integuments.]

Chioglossa lusitanica. Dr. Bonnaret has found an example, which he describes and figures in Arch. Cosmolog. 1867, p. 99, pl. 6.

Plethodon persimilis. Mr. St. G. Mivart has shown that this Newt has no sphenoid teeth, and therefore is the type of a distinct genus, *Pectoglossa*, more nearly allied to *Onychodactylus* than to *Plethodon*. It is from the Laos Mountains. Proc. Zool. Soc. 1867, pp. 695–699.

Plethodon intermedius and *croceater*, spp. nn., Cope, Proc. Ac. Nat. Sc. Philad. 1867, pp. 209, 210, from the Pacific coast of North America.

Amblystoma. Mr. Cope treats of the character of this genus, which by itself forms the family *Amblystomidæ*; from the immense collection preserved in the Smithsonian Institution he gives detailed descriptions of nineteen species, seven of which are new. Proc. Ac. Nat. Sc. Philad. 1867, pp. 166–211. He pays much attention to the various changes during the metamorphosis of each species. The Axolotls are not included.

M. Duméril continues his observations on the development of the Axolotl. He shows by experiments that the external gills are most easily reproduced when lost, and that their removal does not in any way affect their respiration. Three examples out of nine deprived of their branchiæ passed from the larval to the perfect state. Ann. Sc. Nat. 1867, vii. pp. 229–254; Compt. Rend. 1867, August 5, pp. 242–246, translated in Ann. & Mag. Nat. Hist. xx. 446–449.

M. Duméril devotes also a separate memoir to monstrosities (chiefly of the limbs) observed among the young examples bred in Paris. Nouv. Arch. Mus. iii. p. 119, pl. 5.

M. J. M. Philipeaux (Ann. Sc. Nat. 1867, vii. p. 228; Compt. Rend. 1867, June 10, p. 1204; Ann. & Mag. Nat. Hist. xx. p. 149) describes experiments on the reproduction of limbs made on *Axolotls*, with exactly the same results as those obtained on Tritons (see Zool. Record, iii. p. 130).

Menobranchus. On the blood-corpuscles, see Van der Hoeven, in Arch. Neerland. 1867, p. 288.

Proteus. Mr. Cope has examined some skeletons in Hyrtl's collection, and distinguishes five species, viz. *zoisii*, *carraræ*, *xanthostictus*, *schreibersii*, and *anguinus*. Journ. Ac. Nat. Sc. Philad. v. pp. 103, 104.

Remarks on a *Proteus* living for the last seven years in captivity, by Ehrenberg, Sitzgsber. Ges. ntrf. Freund. Berl. 1867, p. 1.

PISCES

BY

ALBERT GÜNTHER, M.A., M.D., PH.D., F.R.S.

A. *Separate Publications.*

KNER, R. Reise der österreichischen Fregatte Novara um die Erde in den Jahren 1857, 1858, 1859. Zoologischer Theil. Fische. 3. Abtheilung. Wien, 1867, 4to, pp. 275–433, with 5 plates.

We gave a description of this work in Zoolog. Record, vol. ii. p. 164. It is concluded by this third part, which contains 24 Anacanthini, 119 Physostomi, 37 Lophobranchi and Plectognathi, 21 Plagiostoma, and 1 Petromyzon; so that the entire collection brought home by the naturalists of the expedition consists of 553 species. The value of the work is less in the number of new species (which amounts to about 20 only) than in the numerous additions to our knowledge of known species. The Recorder has had occasion to carefully examine several portions of the work; and his confidence in the conscientiousness and correctness of Prof. Kner's determinations has been much strengthened during his study. It must also be mentioned that Prof. Kner has limited himself to the collection made by the expedition, whilst some of his fellow labourers, who worked out other classes of animals, have included collections which have no reference whatever to the undertaking.

STORER, D. H. A History of the Fishes of Massachusetts. Cambridge and Boston, 1867, 4to, pp. 288, with 39 plates.

This is a reprint of the articles contained in Mem. Amer. Ac. Arts & Sc. 1857–61.

JACOBY, L. Ueber den Knochenbau der Oberkinnlade bei den Aalen (*Muræenoidei*, Müll.) Inauguralschrift. Halle, 1867, 8vo, pp. 42, with 8 plates. [On the structure of the bones of the upper jaw of the *Muræenoidei*.]

This treatise has been presented by the author to the University of Halle, on the occasion of his taking the degree of Ph.D.—These inaugural dissertations can but rarely be obtained

helveticus= *T. palmatus*; and two of the latter, *S. maculosa* and *S. atra*. He treats of their propagation, development, of the histology of the skin, the skull, and dentition (which is not uniserial). A great part of the paper is devoted to a review of the literature as far as it is known to the author. The paper is illustrated by three plates (pl. 4 representing *T. tæniatus* and *helveticus*), and ought to be studied by all interested in the study of tailed Batrachians. [The author is wrong in denying the fact that the ribs of adult *Pleurodeles* perforate the integuments.]

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M. Duméril devotes also a separate memoir to monstrosities (chiefly of the limbs) observed among the young examples bred in Paris. Nouv. Arch. Mus. iii. p. 119, pl. 5.

M. J. M. Philipeaux (Ann. Sc. Nat. 1867, vii. p. 228; Compt. Rend. 1867, June 10, p. 1204; Ann. & Mag. Nat. Hist. xx. p. 149) describes experiments on the reproduction of limbs made on *Axolotls*, with exactly the same results as those obtained on Tritons (see Zool. Record, iii. p. 130).

Menobranchus. On the blood-corpuscles, see Van der Hoeven, in Arch. Neerland. 1867, p. 288.

Proteus. Mr. Cope has examined some skeletons in Hyrtl's collection, and distinguishes five species, viz. *zoisii*, *carraræ*, *xanthostictus*, *schreibersii*, and *anguinus*. Journ. Ac. Nat. Sc. Philad. v. pp. 103, 104.

Remarks on a *Proteus* living for the last seven years in captivity, by Ehrenberg, Sitzgsber. Ges. ntrf. Freund. Berl. 1867, p. 1.

be far surpassed in this respect by their rivals on the other side of the Atlantic.

KNER, R. Neue Fische aus dem Museum der Herren J. Cæs. Godeffroy & Sohn in Hamburg. Ibid. 1867, lvi. pp. 709–728, with four plates.

MALMGREN, A. J. Bidrag till Finmarkens fiskfauna. Œfvers. Vet. Ak. Förhandl. 1867, pp. 259–265.

MÖBIUS, H. Das Verhalten einiger Fische bei Nacht. Zool. Gart. 1867, pp. 148–150.

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PLAYFAIR, R. L. On the Fishes of Cachar. Proc. Zool. Soc. 1867, pp. 14–17, with a plate.

A list of 26 species, two being new.

——. The Fishes of Seychelles. Ibid. pp. 846–872, with two plates and three woodcuts.

POEY, F. Cubensium genera piscium. Repert. Fis.-nat. de Cuba, ii. 1867, pp. 205–216*.

SCHIÖDTE, J. C. Om Œiestillingens udvikling hos Flynder-Fiskene. Naturhist. Tidsskr. v. pp. 269–275, with a plate. [On the change in the position of the eye in *Pleuronectidæ*.]

STEINDACHNER, F. Ueber einige Fische aus dem Fitzroyflusse bei Rockhampton in Ost-Australien. Sitzgsber. Ak. Wiss. Wien, 1867, lv. pp. 9–16, with a plate.

——. Ichthyologische Notizen. (IV.) Ibid. pp. 517–534, with six plates. (V.) Ibid. pp. 701–717, with three plates. (VI.) Ibid. lvi. pp. 307–376, with three plates.

——. Ueber einige neue und seltene Meeresfische aus China. Ibid. pp. 585–592.

——. Ichthyologischer Bericht über eine nach Spanien und Portugal unternommene Reise. (IV. Fortsetzung.) Uebersicht der Meeresfische an den Küsten Spaniens und Portugals. Ibid. lvi. pp. 603–708, with nine plates. [Report on an ichthyological excursion to Spain and Portugal. Continuation no. 4. The marine fishes of the coasts of the Pyrenean Peninsula.]

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* We see from the cover of the part containing this paper that Prof. Poey published in the same volume a paper entitled "Revista de los Peces descritos por Poey." Unfortunately numbers 1–7 of that volume appear to have been lost during their transmission to England, so that we are obliged to defer the report on this paper.

Fishes, with a detailed description of two forms belonging thereto.]

JOURDAIN, —. Sur la structure du cœur des poissons du genre *Gadus*. Compt. Rend. 1867, January 28, pp. 192–194 (Ann. & Mag. Nat. Hist. 1867, xix. pp. 225, 226).

——. Note sur le système lymphatique du *Gadus morrhua*. Ann. Sc. Nat. 1867, viii. pp. 141–144.

KOWALEVSKY, A. Entwicklungsgeschichte des *Amphioxus lanceolatus*. Mém. Ac. Sc. St. Pétersb. 1867, xi. no. 4, pp. 17, with three plates.

MIKLUCHO-MACLAY. Ueber ein Schwimmblasenrudiment bei Selachiern. Jena. Zeitschr. Med. und Ntrwiss. iii. 1867, pp. 448–453, pl. 10. [On a rudimentary air-bladder in Selachians.]

RANSOM, W. H. Observations on the ovum of Osseous Fishes. Philos. Trans. vol. clvii. pp. 431–502, with four plates.

ROBIN, C. Mémoire sur les dispositions anatomiques des lymphatiques des *Torpilles*, comparées à celle qu'ils presentent chez les autres Plagiostomes. Compt. Rend. 1867, January 7, pp. 20–24 (Ann. & Mag. Nat. Hist. 1867, xix. pp. 149–152); and in Robin's Journ. Anat. & Physiol. 1867, pp. 1–34, with three plates.

SMITH, J. A. Notice of the occurrence of double or vertical Hermaphrodism in a common Codfish (*Morrhua vulgaris*) recently taken in the Firth of Forth. Proc. R. Phys. Soc. Edinb. 1864–65, pp. 300–302.

GENERAL REMARKS AND FAUNÆ.

Dr. GÜNTHER directs attention to the fact that in numerous groups of fishes which live in mud, forms occur entirely devoid of, or with only rudimentary, ventral fins. Ann. & Mag. Nat. Hist. xx. p. 308.

In order to ascertain the cause of death of marine fishes transferred into fresh water, M. BERT made a series of experiments. He dissolved sugar in the water, so as to render its density equal to that of sea-water; the fishes introduced into this solution survived for a considerably longer period than others brought into pure water. Ann. Sc. Nat. 1867, vii. pp. 369–371.

M. COSTE, Compt. Rend. 1867, January 21, pp. 99, 100 (Ann. & Mag. Nat. Hist. 1867, xix. p. 227), directs attention to a large marine reservoir at Concarneau, in which the conditions of the open sea are so well imitated that a female *Scyllium catalus* deposited her eggs, which were hatched.

Great Britain. Dr. Günther has reported on some fishes collected by Mr. J. Gwyn Jeffreys in the sea of the Shetland Islands (not Hebrides, as erroneously stated in the paper) at a depth of 80 or 90 fathoms. The four species, *Ammodytes siculus* (Swains.), *Motella macrophthalma*, sp. n., *Callionymus maculatus* (Bonap.), and *Gobius jeffreysii*, were new to the British fauna. He adds some remarks on deep-sea fishes generally. Ann. & Mag. Nat. Hist. xx. pp. 288–291.

p. 1) has published some general notes on Japanese fishes, adding a list of those of which he has determined the Japanese names.

Nova Scotia. The food-fishes of Nova Scotia are worked out in a very able manner by Dr. Gilpin and the Rev. J. Ambrose, in Proc. & Trans. N. Scot. Instit. Nat. Sc. Halifax. The former has continued the paper which we mentioned in Zool. Record, iii. p. 138, in vol. ii. of that Journal, part 1. pp. 101–111, where he treats of the fishes of the Gadoid family. The latter gentleman has taken up the more practical side of this fish-fauna, and confines himself to the fishes of St. Margaret's Bay, ibid. i. part 4. pp. 33–43; and ii. part 1. pp. 67–76.

United States. A most valuable addition to our knowledge of North-American ichthyology has been furnished by Mr. E. D. Cope, who has described the Cyprinoids of Pennsylvania in Trans. Am. Phil. Soc. xiii. pp. 351–399. They are 28 in number, and the more important forms are figured. All will be referred to subsequently. The author has also added a supplementary synopsis of the *Esoces* of Middle North America, pp. 407–410.

Barbadoes. Dr. Steindachner has published notes on 12 species, which will be mentioned subsequently. Sitzgsber. Ak. Wiss. Wien, lvi. p. 347.

Cuba. Prof. Poey gives a list of the genera to which he refers the species of Cuban Fishes, adopting as much as possible the distinctions proposed by Mr. Gill. The total number of species is 685, of which 122 are of a dubious character. Repert. Fis.-nat. de Cuba, ii. 1867, pp. 205–216.

Minas Geraës. Prof. Reinhardt, in the French *résumé* of his paper on three new Characines (see Zoolog. Record, iii. p. 134) in Rés. Bull. Soc. Dan. Sc. 1866, adds some general remarks on the fish-fauna of the Rio S. Francisco, and more especially of the Rio das Velhas. He says that from this immense system of rivers only 71 species are known, and therefore that, although many more may be discovered, this part of the Amazonian system must be regarded as very poor in species when compared with other tributaries or the main stream itself, Mr. Wallace having calculated the number of fishes of the Rio Negro at 500, and Prof. Agassiz those of the Amazon at 2000 at least. He states that at present 384 species are known from Brazil generally. Singular is the absence of Chromides in the San Francisco.

River La Plata. Dr. Steindachner has determined some fishes as *Corvina gillii*, sp. n.?, *Atherinichthys bonariensis*, *Pimelodus maculatus*, *Xiphoramphus oligolepis*, sp. n., and *Engraulis dentex*. Sitzgsber. Ak. Wiss. Wien, lvi. pp. 335–342.

Chili. Dr. Philippi's remarks on Chilian freshwater fishes (see Zool. Record, iii. p. 139) are translated in Ann. & Mag. Nat. Hist. 1867, xix. pp. 427–435.

Samoa Islands. Messrs. Kner & Steindachner describe several marine fish from this little-known group of islands. Sitzgsber. Ak. Wiss. Wien, 1867 (1866), liv. p. 356.

Australia. Dr. Günther has published notes on 78 species of fishes received by the British Museum in the course of the last years from various parts of Australia. Fourteen were undescribed, and will be referred to subsequently. Ann. & Mag. Nat. Hist. 1867, xx. pp. 57–67.

Cape York. Dr. Steindachner has published descriptions of, or notes on, 21 species collected at Cape York. Sitzgsber. Ak. Wiss. Wien, 1867, lvi.

through booksellers, generally only from the University to which they are presented; and therefore we are very glad to see Dr. Jacoby's paper reprinted in Zeitschr. ges. Ntrwiss. xxx. pp. 258-297.

B. *Papers published in Journals.*

Ambrose, J. Some observations on the fishing-grounds and fish of St. Margaret's Bay, N. S. Proc. & Trans. N. Scot. Inst. Nat. Sc. i. part 4. pp. 33–43; ii. part 1. pp. 67–76.

Bleeker, P. Description de quelques espèces nouvelles de *Gobius* de Madagascar. Arch. Néerland. 1867, pp. 403–420.

Canestrini, G. Due note ittiologiche. 1. Sopra alcuni pesci dell' Arno. 2. Effetti di dimagramento osservati nel *Gobius fluviatilis* (Bon.). Annuar. Soc. Nat. Modena, ii. 1867, pp. 7–13.

Also in this paper the author has continued to show the variations of fishes by which ichthyologists, and recently particularly Blanchard, have been induced to describe a number of nominal species.

Capello, F. de Brito. Peixes novos de Portugal e da Africa occidental e caractéres distinctivos d'outras especies já conhecidas. Jorn. Sc. math. phys. e nat. Lisboa, no. ii. 1867, March, pp. 154–169, with a plate.

Notices or describes six species, which will be mentioned subsequently.

——. Catalogo dos peixes de Portugal que existem no Museu de Lisboa. Ibid. no. iii. 1867, Agost. pp. 233–264, with a plate. Continued in no. iv. [Not concluded.]

Cope, E. D. Synopsis of the Cyprinidæ of Pennsylvania. Trans. Am. Phil. Soc. xiii. 1867, pp. 351–399, with four plates and woodcuts. To which is added a Supplement on some new species of American and African Fishes, pp. 400–407; and a Supplementary Synopsis of the Esoces of Middle North America, pp. 407–410.

The author concludes the first very valuable paper with his views "on the probable law of evolution of types," pp. 397, 398.

——. On the Genera of Freshwater Fishes, *Hypsilepis* and *Photogenis*, Cope, their species and distribution. Proc. Ac. Nat. Sc. Philad. 1867, pp. 156–166.

Day, F. On the Fishes of the Neilgherry Hills and rivers around their bases. Proc. Zool. Soc. 1867, pp. 281–302.

The author, in his introductory remarks, observes that an attempt to introduce Trout into the waters of the Neilgherry hills has failed (as has been foreseen by all acquainted with the nature of Salmonoid fishes), but that he has transported several

species from the lower country to the Ootacamund Lake and the Pykara River.

DAY, F. On some Fishes from the Wynaad. Proc. Zool. Soc. 1867, pp. 347–350.

——. On some new or imperfectly known Fishes of Madras. Ibid. pp. 558–565.

——. On some new or imperfectly known Fishes of India. Ibid. pp. 699–707, 935–942.

GILPIN, J. B. On the Food-fishes of Nova Scotia. No. V. Proc. & Trans. N. Scot. Instit. Nat. Sc. ii. pt. 1. pp. 101–111. [See Zool. Record, iii. p. 134.]

GÜNTHER, A. Descriptions of some new or little-known species of Fishes in the collection of the British Museum. Proc. Zool. Soc. 1867, pp. 99–104, with a plate.

——. Additions to the knowledge of Australian Reptiles and Fishes. Ann. & Mag. Nat. Hist. 1867, xx. pp. 45–67.

——. New Fishes from the Gaboon and Gold Coast. Ibid. pp. 110–117, with two plates.

——. Additions to the British Fauna. Ann. & Mag. Nat. Hist. 1867, xx. pp. 288–291, with a plate.

——. On a new form of Mudfish from New Zealand [*Neochanna*]. Ibid. pp. 305–309, with a plate.

JOHNSON, J. Y. Description of a new genus of *Spinacidæ*, founded upon a Shark obtained at Madeira. Proc. Zool. Soc. 1867, pp. 713–715. [*Machephilus*.]

KNER, R. Betrachtungen über die Ganoiden, als natürliche Ordnung. Sitzgsber. Ak. Wiss. Wien, liv. pp. 519–536. [Remarks on the Ganoids as a natural order.]

——, and STEINDACHNER, F. Neue Fische aus dem Museum der Herren Joh. C. Godeffroy & Sohn in Hamburg. Ibid. 1867 (1866*), liv. pp. 356–395, with five plates.

This paper contains descriptions of thirty new or known species collected by Dr. Ed. Gräffe in the South Sea, especially on the Samoa Islands. Dr. Gräffe collects for Messrs. Godeffroy & Son, of Hamburg, who have founded a private zoological museum which is yearly growing in importance. These gentlemen well deserve thanks on the part of science, as the "merchant-princes" of the Old World are by no means conspicuous for their liberality in the interest of science, and have allowed themselves to

* This paper was presented to the Academy on July 5, 1866, and published in 1867, this date being printed on the cover of the *part* containing the paper, whilst the date 1866 is introduced again on the titlepage of the *entire volume*. Following the real date of publication, we did not notice the paper in our last 'Record.'

be far surpassed in this respect by their rivals on the other side of the Atlantic.

KNER, R. Neue Fische aus dem Museum der Herren J. Cæs. Godeffroy & Sohn in Hamburg. Ibid. 1867, lvi. pp. 709–728, with four plates.

MALMGREN, A. J. Bidrag till Finmarkens fiskfauna. Œfvers. Vet. Ak. Förhandl. 1867, pp. 259–265.

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C. *Anatomical and Physiological Papers.*

Baudelot, E. Etude sur le disque céphalique des Rémoras (*Echeneis*). Ann. Sc. Nat. 1867, vii. pp. 153–160, with a plate; Compt. Rend. 1867, pp. 625–627 (Ann. & Mag. Nat. Hist. xix. pp. 375, 376).

Baudelot, E. Observations d'un phénomène comparable à la mue chez les poissons. Ann. Sc. Nat. 1867, vii. pp. 339–344; or Compt. Rend. 1867, Aug. 5, pp. 247–250.

——. Considérations sur quelques particularités du système musculaire des Poissons. Compt. Rend. 1867, June 10, pp. 1205–1208.

Bert, P. Note sur la mort des Poissons de mer dans l'eau douce. Ann. Sc. Nat. 1867, vii. pp. 369–371.

——. Note sur quelques points de la physiologie de la Lamproi (*Petromyzon marinus*). Ibid. pp. 371–373.

——. Sur l'*Amphioxus*. Compt. Rend. 1867, August 26, pp. 364–367 (Ann. & Mag. Nat. Hist. xx. pp. 302–304).

Dönitz, W. Ueber die Gelenke an der Rücken- und Afterflosse der *Teuthies* (C. & V.). Reichert und Du Bois Reymond's Arch. Anat. 1867, pp. 210–220, with a plate. [On the joints in the dorsal and anal fins of the *Teuthies*.]

Gegenbaur, C. Ueber die Entwicklung der Wirbelsäule des *Lepidosteus*, mit vergleichend anatomischen Bemerkungen. Jena. Zeitschr. Med. und Ntrwiss. iii. 1867, pp. 359–419, with three plates. [On the development of the vertebral column of *Lepidosteus*, with remarks on its comparative anatomy.]

The paper is divided into four parts, viz.:—1, on the vertebral column of *Lepidosteus*; 2, comparison of the chorda dorsalis of Ganoids; 3, comparative review of the structure of the vertebral column of vertebrates; 4, on the hæmal arches.

Grenacher, H. Beiträge zur nähern Kenntniss der Musculatur der Cyclostomen und Leptocardier. Sieb. und Kölliker's Zeitschr. 1867, pp. 577–597, pl. 36. [Contributions to a better knowledge of the myology of the *Cyclostomata* and *Leptocardii*.]

Hannover, A. Om Bygningen og Udviklingen af Skjäl og Pigge hos Bruskfisk tilligemed udförligere Beskrivelse af tvende herhen hörende Former. Dansk. Vid. Selsk. Skrift. vii. 1868, pp. 483–530, with 4 plates and woodcuts. (Abstract in Œfvers. Dansk. Vid. Selsk. Förhandl. 1867, pp. 46–52; and in Résumé du Bulletin of the same journal, pp. 31–37, French translation.) [On the structure and development of the scales and spines in the Cartilaginous

Fishes, with a detailed description of two forms belonging thereto.]

Jourdain, —. Sur la structure du cœur des poissons du genre *Gadus*. Compt. Rend. 1867, January 28, pp. 192–194 (Ann. & Mag. Nat. Hist. 1867, xix. pp. 225, 226).

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Kowalevsky, A. Entwicklungsgeschichte des *Amphioxus lanceolatus*. Mém. Ac. Sc. St. Pétersb. 1867, xi. no. 4, pp. 17, with three plates.

Miklucho-Maclay. Ueber ein Schwimmblasenrudiment bei Selachiern. Jena. Zeitschr. Med. und Ntrwiss. iii. 1867, pp. 448–453, pl. 10. [On a rudimentary air-bladder in Selachians.]

Ransom, W. H. Observations on the ovum of Osseous Fishes. Philos. Trans. vol. clvii. pp. 431–502, with four plates.

Robin, C. Mémoire sur les dispositions anatomiques des lymphatiques des *Torpilles*, comparées à celle qu'ils presentent chez les autres Plagiostomes. Compt. Rend. 1867, January 7, pp. 20–24 (Ann. & Mag. Nat. Hist. 1867, xix. pp. 149–152); and in Robin's Journ. Anat. & Physiol. 1867, pp. 1–34, with three plates.

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Finmark. Dr. Malmgren enumerates 53 species of marine fishes. Œfvers. Vet. Ak. Förhandl. 1867, pp. 259–265.

Pyrenean Peninsula. Dr. Steindachner has commenced a report on the marine fishes, Sitzgsber. Ak. Wiss. Wien, 1867, lvi. pp. 603–708. He gives detailed descriptions of nearly all the species which came under his observation; the part published treats of 2 *Beryces*, 13 *Percoids*, 10 *Pristipomatoids*, 1 *Mullus*, 4 *Sciænoids*, 15 *Sparoids*, 5 *Scorpænoids*, 10 *Cottoids*, 4 *Trachinoids*, 1 *Sphyræna*, and 5 *Trichiuroids*.—Additions to our knowledge of these fishes will be mentioned in the special part of this Record.

Portugal. M. Capello has commenced the publication of a Catalogue of the Fishes of Portugal contained in the Collection of the Lisbon Museum (Jorn. Sc. Math. Phys. e Nat. Lisb. iii. pp. 233–264). After having given a list of 244 vernacular names, he proceeds to enumerate the species observed by him systematically. The present publication goes as far as the *Trichiuridæ*, with 62 species. Several of the species are accompanied with descriptive notes, and the more remarkable will be mentioned subsequently.—We have just received, through the kindness of the author, a separate copy of the continuation, which will appear in the same journal, part iv.; it contains the *Scombridæ*, *Carangidæ*, and *Xiphiidæ*, with species nos. 63 to 84.

Italy, River Arno. Prof. Canestrini has determined, and made remarks on, eleven species of fishes from this river. Ann. Soc. Nat. Modena, ii. 1867, pp. 7–12.

Palestine. Mr. Tristram's work on the Natural History of the Bible has been noticed above, p. 3.

Seychelle Islands. Lieut.-Col. Playfair has given a list of 211 species, most of which were collected by himself. Some of the less known are described, and five are new to science. Proc. Zool. Soc. 1867, pp. 846–872.

Tropical Africa. Dr. Günther has described some collections from the Gaboon and Gold Coast, Ann. & Mag. Nat. Hist. xx. pp. 110–117. He again directs attention to the identity of the fish-fauna of the Upper Nile with that of Tropical West Africa. The paper contains, beside remarks on known species, descriptions of fifteen new forms.

West Africa. Dr. Steindachner describes nine marine species (four as new) from Monravia. Sitzgsber. Ak. Wiss. Wien, 1867, lv. pp. 517–526.

Nilgherries. Surgeon F. Day enumerates or describes thirty-four species of fishes collected by him in the waters on, or at the base of, the Nilgherries. Proc. Zool. Soc. 1867, pp. 281–302.

Hindostan. Dr. Steindachner has furnished descriptions of 12 Cyprinoids in Sitzgsber. Ak. Wiss. Wien, lvi. pp. 358–375. A separate copy of this paper was published, and accessible through booksellers, in 1867, so that the Recorder was enabled to refer to it in the 7th volume of his general work on Fishes; therefore this notice will suffice.

Cachar. Lieut.-Col. Playfair enumerates 26 species contained in a collection from this province. Proc. Zool. Soc. 1867, pp. 14–17.

Halmaheira. Dr. Bleeker adds 21 species to the fauna of this island; the total number of fishes inhabiting its waters is 122. Arch. Neerland. 1867, p. 397.

China. Dr. Steindachner has added five new species to the fauna of the seas of China. Sitzgsber. Ak. Wiss. Wien, 1867, lv. pp. 585–592.

Japan. Dr. v. Martens (Preuss. Ostasiat. Expedit. pp. 116–127, see above,

p. 1) has published some general notes on Japanese fishes, adding a list of those of which he has determined the Japanese names.

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Barbadoes. Dr. Steindachner has published notes on 12 species, which will be mentioned subsequently. Sitzgsber. Ak. Wiss. Wien, lvi. p. 347.

Cuba. Prof. Poey gives a list of the genera to which he refers the species of Cuban Fishes, adopting as much as possible the distinctions proposed by Mr. Gill. The total number of species is 685, of which 122 are of a dubious character. Repert. Fis.-nat. de Cuba, ii. 1867, pp. 205–216.

Minas Geraës. Prof. Reinhardt, in the French *résumé* of his paper on three new Characines (see Zoolog. Record, iii. p. 134) in Rés. Bull. Soc. Dan. Sc. 1866, adds some general remarks on the fish-fauna of the Rio S. Francisco, and more especially of the Rio das Velhas. He says that from this immense system of rivers only 71 species are known, and therefore that, although many more may be discovered, this part of the Amazonian system must be regarded as very poor in species when compared with other tributaries or the main stream itself, Mr. Wallace having calculated the number of fishes of the Rio Negro at 500, and Prof. Agassiz those of the Amazon at 2000 at least. He states that at present 384 species are known from Brazil generally. Singular is the absence of Chromides in the San Francisco.

River La Plata. Dr. Steindachner has determined some fishes as *Corvina gillii*, sp. n.?, *Atherinichthys bonariensis*, *Pimelodus maculatus*, *Xiphoramphus oligolepis*, sp. n., and *Engraulis dentex*. Sitzgsber. Ak. Wiss. Wien, lvi. pp. 335–342.

Chili. Dr. Philippi's remarks on Chilian freshwater fishes (see Zool. Record, iii. p. 139) are translated in Ann. & Mag. Nat. Hist. 1867, xix. pp. 427–435.

Samoa Islands. Messrs. Kner & Steindachner describe several marine fish from this little-known group of islands. Sitzgsber. Ak. Wiss. Wien, 1867 (1866), liv. p. 356.

Australia. Dr. Günther has published notes on 78 species of fishes received by the British Museum in the course of the last years from various parts of Australia. Fourteen were undescribed, and will be referred to subsequently. Ann. & Mag. Nat. Hist. 1867, xx. pp. 57–67.

Cape York. Dr. Steindachner has published descriptions of, or notes on, 21 species collected at Cape York. Sitzgsber. Ak. Wiss. Wien, 1867, lvi.

pp. 307–320. Most of the species are well known; so that we shall refer to those only to which some interest is attached.

Queensland. Dr. Steindachner describes seven new species from the Fitzroy River near Rockhampton, ibid. lv. pp. 9–16.

Port Jackson. Dr. Steindachner has continued his notes on the fishes of this fauna (see Zool. Record, iii. p. 139). Ibid. lvi. pp. 320–335. He brings their number up to 90, describing five species as new; but, again, three of them at least have already proved to be known.

Victoria. Prof. M'Coy enumerates the food-fishes of Victoria. See above, p. 10.

ACANTHOPTERYGII.

PERCIDÆ.

Labrax punctatus (Bl.) figured by Capello, Jorn. Sc. math. phys. e nat. Lisb. no. ii. 1867, fig. 3.

Etheostoma macrocephalum, sp. n., Cope, Trans. Am. Phil. Soc. xiii. p. 400, Pennsylvania.

Centropristis dispilurus, sp. n., Günther, Proc. Zool. Soc. 1867, p. 99, Trinidad.

Serranus. Lieut.-Col. Playfair enumerates 17 species from the Seychelles; he says that *S. gaimardi* is distinct from *S. longispinis* (Kner), and makes some remarks on *S. areolatus* (Forsk.). Proc. Zool. Soc. 1867, pp. 847, 848.

Serranus radiatus, sp. n., Day, Proc. Zool. Soc. 1867, p. 699, from Madras. D. $\frac{11}{15}$. A. $\frac{3}{8}$. L. lat. above 120; caudal wedge-shaped.—*Serranus grammicus*, sp. n., Day, *l. c.* p. 700, from Madras. D. $\frac{11}{12}$. A. $\frac{3}{8}$. L. lat. 90; caudal truncate.

Dr. Steindachner has published some notes on *Serranus arara* (Poey), *S. undulosus* (Gthr.), *S. apua* (Bl.), and *S. lunulatus* (Schn.). Sitzgsber. Ak. Wiss. Wien, lvi. pp. 348, 349.

Serranus cernioides, sp. n., Capello, Jorn. Sc. math. phys. e nat. Lisb. no. ii. 1867, p. 156, and no. iii. 1867, p. 244, tab. 4. fig. 1, from Portugal.—D. $\frac{11}{13}$. A. $\frac{3}{8}$. L. lat. 112. L. transv. 21/59. It is considered to be identical with *S. gigas* by Steindachner, Sitzgsber. Ak. Wiss. Wien, lvi. p. 613.

M. Capello regards *Serranus fimbriatus* (Lowe) as a valid species, p. 246, and describes, with doubt, a third species as *Serranus gorcensis* (C. & V.), p. 247.

Serranus alexandrinus (C. & V.) described by Steindachner, *l. c.* p. 615.

Serranus fuscus (Lowe)=*S. emarginatus* (Val.) according to Steindachner, *l. c.* p. 616; figured on plate 2. fig. 1.

Serranus novemcinctus (Kner, see Zool. Record, ii. p. 180)=*S. cabrilla*, Steindachner, *l. c.* p. 611.

Plectropoma. Prof. Kner describes *Pl. pictum* (Tschudi) and *Pl. macrophthalmum* (Tschudi), Sitzgsber. Ak. Wiss. Wien, lvi. pp. 710, 711, and figures the latter, taf. 1.—Dr. Günther describes specimens of *Plectropoma susuki* (Schleg.) from Sydney. Proc. Zool. Soc. 1867, p. 100.

Rhypticus. Dr. Steindachner has published some notes on *R. arenatus*, and a description of a supposed new species, *R. nigromaculatus*, from Barbadoes; the typical specimen is 1¾ in. long! *L. c.* pp. 347, 348.

Mesoprion. Lieut.-Col. Playfair enumerates 12 species from the Seychelles, and describes *M. machas* (C. & V.) and *M. erythrinus* (Rüpp.). *L. c.* p. 849.

Mesoprion mitchelli, sp. n., Günther, Ann. & Mag. Nat. Hist. 1867, xix. p. 257, pl. 9, from Madras.

Mesoprion russelli (Bikr.) described by Mr. Day. Proc. Zool. Soc. 1867, p. 701.

Priacanthus speculum (C. & V.) described by Playfair, *l. c.* p. 850.

Ambassis agassizii, sp. n., Steindachner, Sitzgsber. Ak. Wiss. Wien, lv. 1867, p. 9, from Queensland.—*Ambassis agrammus*, sp. n., Günther, Ann. & Mag. Nat. Hist. xx. p. 57, from Cape York.

Apogon bleekeri has been described as *Apogon notatus* (sp. n.) by Day, Proc. Zool. Soc. 1867, p. 936, Madras.

Apogon aterrimus, sp. n., Günther, *l. c.*, Cape York.—*Apogon australis*, sp. n., Steindachner, *l. c.* lv. p. 10, from Queensland.

Apogonichthys gillii, sp. n., Steindachner, *l. c.* p. 11, taf. 1. fig. 1, Queensland.—*Apogonichthys stellatus*, sp. n., Cope, Trans. Am. Phil. Soc. xiii. p. 400, Bahama Islands.

An *Apogon*-like fish has been described as *Mionorus lunatus* (g. et sp. n.) by Mr. Krefft, Proc. Zool. Soc. 1867, p. 942, from Cox's River, New South Wales.

Pomatomus telescopus. M. Capello observes that this fish is provided with palatine teeth. Jorn. Sc. math. phys. e nat. Lisb. no. ii. 1867, p. 160.

Dules viverrinus, sp. n., Krefft, Proc. Zool. Soc. 1867, p. 943, Murray River. —*Dules reinhardtii* is described as a new species from Port Jackson by Dr. Steindachner, Sitzgsber. Ak. Wiss. Wien, lvi. p. 320.

Pristipomatidæ.

Therapon percoides is described by Dr. Steindachner as *Datnia fasciata*, sp. n., Sitzgsber. Ak. Wiss. Wien, lvi. p. 322. [This species comes from Queensland, and not from Port Jackson.]—*Datnia brevispinis* is described as a new species from Cape York by Dr. Steindachner, *l. c.* p. 309.

Pristipoma octolineatum (C. & V.) is described and figured by Dr. Steindachner as *Diagramma octolineatum*, *l. c.* p. 621, taf. 3.

Pristipoma guoraka (C. & V.) is described as *Pristipoma neilli* (sp. n.) by Day, Proc. Zool. Soc. 1867, p. 936, Madras.

Diagramma punctatissimum, sp. n., Playfair, Proc. Zool. Soc. 1867, p. 851, pl. 40, Seychelles.—*Diagramma melanospilum*, sp. n., Kner, Sitzgsber. Ak. Wiss. Wien, lvi. p. 712, from the west coast of South America.

Dentex. M. Capello (Jorn. math. phys. e nat. Lisboa, iii. p. 249) enumerates four species as occurring on the coast of Portugal. He figures the head of *D. filosus* (?), tab. 4. fig. 2 (this figure represents an adult *D. vulgaris*, according to Steindachner, Sitzgsber. Ak. Wiss. Wien, lvi. p. 624, who figures the head, taf. 8); and describes *Dentex parvulus* as a new species, p. 250.—Dr. Steindachner believes himself to have recognized *Dentex maroccanus* (C. & V.), and describes the specimens referred to it, *l. c.* p. 628, taf. 4. fig. 1.—*Dentex macrophthalmus* (Bl.), id. p. 626, pl. 5.

Pristipomoides aurolineatus, sp. n., Day, *l. c.* p. 937, Madras.

Smaris chryselis (C. & V.) is said by Dr. Steindachner (*l. c.* p. 631) to be the male of *S. vulgaris*, and not of *S. alcedo*.

Squamipinnes.

Chætodon dorsalis. Messrs. Kner & Steindachner describe a variety from Mauritius. Sitzgsber. Ak. Wiss. Wien, liv. p. 361.

Holacanthus duboulayi, sp. n., Günther, Ann. & Mag. Nat. Hist. xx. p. 67, North-western Australia.—*Holacanthus ignatius*, sp. n., Playfair, Proc. Zool. Soc. 1867, p. 852, pl. 41, Seychelles.—*Holacanthus monophthalmus*, sp. n., Kner, Sitzgsber. Ak. Wiss. Wien, lvi. p. 714, fig. 2, Pacific.

Scatophagus ornatus (C. & V.) = *Sc. argus*, young. Günther, Ann. & Mag. Nat. Hist. xx. p. 58.

Drepane punctata [which proves to be a rather common species on the west coast of Africa] is described as *Cryptosmilia luna* (g. & sp. n.) by Mr. Cope, Trans. Am. Phil. Soc. xiii. p. 401.

Mullidæ.

Mullus barbatus and *surmuletus* are not specifically distinct, according to Steindachner, Sitzgsber. Ak. Wiss. Wien, 1867, lvi. p. 635.

Upeneus signatus, sp. n., Günther, Ann. & Mag. Nat. Hist. xx. p. 59, from Port Jackson.

Upeneoides bivittatus and *vittatus* are compared by Mr. Day, Proc. Zool. Soc. 1867, p. 702.—*Upeneoides tragula* is described as *Upeneoides guttatus* (sp. n.) by Day, *l. c.* p. 938.

Sparidæ.

Doydixodon. Messrs. Kner & Steindachner have received from the Godeffroy Museum an example from Iquique on the west coast of South America, which they describe as a new species, *D. fasciatum*, Sitzgsber. Ak. Wiss. Wien, liv. p. 358, fig. 2. The authors state that Günther erroneously describes the vomer as toothless, and the præoperculum as entire. Valenciennes's original account in the 'Voyage of the Venus' was not accessible to them.—[If the authors had been accurate in their statements, they would have added that I had no specimen for examination when I formed the diagnosis of *Doydixodon*, and, consequently, that the reproach of incorrectness should have been made to Valenciennes, who gave the original description of this fish. However, I was on the point of adopting the correction made by the Viennese ichthyologists, when I fortunately received from the Godeffroy Museum one of the typical specimens of this *D. fasciatum*, and on examining it I found that, in this case, Valenciennes was the correct observer. The specimen is of the same size as that sent to Vienna. It has no trace of vomerine teeth, the entire palate being covered by a soft papillose mucous membrane; and, likewise, the præoperculum is without any indication of serrature. The dorsal fin $\frac{12}{1/5}$, anal $\frac{3}{1/2}$, are as stated by Messrs. Kner and Steindachner. The same numbers are represented in Valenciennes's figure, so that those given by him in the text appear to be incorrect. The faint cross bands observed by Messrs. K. & St. have disappeared, and the specimen is now "uniform

brown," and, in fact, nothing but Valenciennes's *Doydixodon freminvillii*. The teeth are obtusely tricuspid, and the cusps appear to become still more indistinct in older examples.]

Haplodactylus regina. Messrs. Kner & Steindachner describe a variety, *l. c.* p. 360.

Sargus vetula=*S. rondeletii*, according to Steindachner, Sitzgsber. Ak. Wiss. Wien, lvi. p. 644.

Lethrinus karwa (C. & V.). Mr. Day believes himself to have recognized this fish in a specimen which he describes, Proc. Zool. Soc. 1867, p. 558.

Pagrus orphus (Risso)=*P. vulgaris*, according to Steindachner, *l. c.* p. 655. *P. vulgaris* is figured on taf. 7.

Pagellus güntherii is described as a new species from the coast of Portugal by M. Capello, Jorn. math. phys. e nat. Lisb. iii. p. 253, pl. 4. fig. 3 (dentition). It is the variety with three series of molar teeth of *P. erythrinus* mentioned by Günther, Fish. i. p. 474.

Pagellus bogaraveo (C. & V.) is [erroneously] referred to *P. centrodontus* by Dr. Steindachner, *l. c.* p. 663.

Chrysophrys crassirostris (C. & V.)=*Chr. aurata*, according to Steindachner, *l. c.* p. 658.

Hoplognathidæ.

Hoplognathus fasciatus (Kröy.) is described as *Scarostoma insigne* (g. et sp. n.) by Prof. Kner, Sitzgsber. Ak. Wiss. Wien, 1867, lvi. p. 715, fig. 3.

Cirrhitidæ.

Chilodactylus. Dr. Günther makes some remarks on *Ch. nigricans* and *Ch. gibbosus*, Ann. & Mag. Nat. Hist. xx. p. 59.

Scorpænidæ.

Sebastes filifer (Valenc.) mentioned by Capello as occurring on the coast of Portugal, Jorn. Sc. math. phys. e nat. Lisboa, iii. p. 255. [The same author mentions also *Sebastes kuhlii*. Specimens received from the Lisbon Museum with this name are *Scorpæna scrofa*.]

Scorpæna rosea, sp. n., Day, Proc. Zool. Soc. 1867, p. 703, Madras.

Teuthididæ.

Dr. Dönitz describes the joints between the dorsal and anal spines and their interneurals and interhæmals. Reichert u. Du Bois Reym. Arch. 1867, p. 210. [Also described by the Recorder in the 'Catal. of Fishes.']

Berycidæ.

Beryx decadactylus figured by Steindachner, Sitzgsber. Ak. Wiss. Wien, lvi. p. 603, taf. 1.

Myripristis humilis, sp. n., Kner & Steindachner, Sitzgsber. Ak. Wiss. Wien, 1867 (1866), liv. p. 357, fig. 1, from the Samoa Islands.

Holocentrum tahiticum, see Zool. Record, iii. p. 186. Prof. Kner observes with regard to this fish that taf. 1. fig. 2 of the 'Fishes of the Novara,' represents a *Holocentrum sammara*, which accidentally got mixed up with the specimens of *H. tahiticum*. Novara, Fisch. p. 423.

Polynemidæ.

Polynemus macrochir, sp. n., Günther, Ann. & Mag. Nat. Hist. xx. p. 60, from New South Wales.

Sciænidæ.

Umbrina cirrhosa and *U. canariensis* are described by Steindachner, Sitzgsber. Ak. Wiss. Wien, 1867, lvi. pp. 637, 638; the latter is figured on pl. 6. fig. 1.

Corvina monacantha, sp. n., Cope, Trans. Am. Phil. Soc. xiii. p. 402, from Paramaribo.—D. 10 | $\frac{1}{33}$. A. 1/5. L. lat. 49.

Corvina gillii is described as a doubtfully new species from the La Plata River by Dr. Steindachner, Sitzgsber. Ak. Wiss. Wien, lvi. p. 335.—D. 10/$\frac{1}{32}$. L. lat. 52.

Corvina (*Amblodon*) *neglecta* (Girard) described by Dr. Steindachner, *l. c.* p. 344.

Otolithus aneus (Bl.) described by Day, Proc. Zool. Soc. 1867, p. 939.

Otolithus atelodus, sp. n., Günther, Ann. & Mag. Nat. Hist. xx. p. 60, Australia.

Eques pulcher is described as a new species by Dr. Steindachner, *l. c.* p. 349, Barbadoes.

Xiphiidæ.

Histiophorus gladius. A specimen from the Seychelles described by Playfair, Proc. Zool. Soc. 1867, p. 856.

Trichiuridæ.

Trichiurus lepturus. A specimen has been taken in Mounts-Bay. Zoologist, 1867, p. 793.

Thyrsites atun (C. & V.) described by Kner & Steindachner, Sitzgsber. Ak. Wiss. Wien, liv. p. 363.

Nesiarchus nasutus (Johns.) is described by M. Capello as *Prometheus paradoxus* (sp. n.), Jorn. Sc. Math. phys. e nat. Lisb. iii. p. 260, pl. 4. fig. 5. M. Capello appears to be entirely unacquainted with the important publications of Mr. Johnson, as is also evident from his attempt at subdividing systematically the family of *Trichiuridæ* (p. 263). The skull is figured by Dr. Steindachner, Sitzgsber. Ak. Wiss. Wien, lvi. taf. 9.

Acronuridæ.

Dr. Dönitz describes the peculiarity of the joints in the dorsal and anal fins. Reichert und Du Bois Reymond's Arch. Anat. 1867, p. 210, taf. 7 A.—The same paper is noticed in Sitzgsber. ntrf. Freund. Berl. 1866 (1867), p. 25, where the author draws the rather hasty conclusion, that the *Acronuridæ* should be reunited with the *Teuthididæ*.

Acanthurus matoides. Head of an old example figured by Playfair, Proc. Zool. Soc. 1867, p. 858.

Carangidæ.

Trachurus trachurus. Notes on a specimen from Valparaiso by Kner and Steindachner, Sitzgsber. Ak. Wiss. Wien, liv. p. 364.—*Trachurus fallax*, sp. n., Capello, Jorn. Sc. math. phys. e nat. Lisboa, iv. p. , coast of Portugal.

Caranx venator, sp. n., Playfair, Proc. Zool. Soc. 1867, p. 859, fig. 2, Seychelles.—*Caranx nigrescens*, sp. n., Day, ibid. p. 704, Madras.—*Caranx macrops* is described as a new species by Dr. Steindachner, Sitzgsber. Ak. Wiss. Wien, 1867, lv. p. 519, taf. 1. fig. 1, from West Africa.—D. $\frac{1}{8}$ | 21. A. 2/18. L. lat. 40.

Seriola bonariensis (C. & V.) described from a St.-Helena example by Kner and Steindachner, Sitzgsber. Ak. Wiss. Wien, liv. p. 365.

Seriolichthys lineolatus, described by Mr. Day as a new species, Proc. Zool. Soc. 1867, p. 559, is identical with *Seriolichthys bipinnulatus*.

Coryphænidæ.

Schedophilus marmoratus, described by Messrs. Kner & Steindachner, Sitzgsber. Ak. Wiss. Wien, 1867 (1866), liv. p. 366, as a new species from the South Sea, is identical with *Sch. maculatus*. [The specimen in the British Museum has nine dorsal spines.]

Ausonia cuvieri. Dr. W. K. Bullmore has described a male specimen of this species, naming it *Ausonia cocksii*. Journ. R. Instit. Cornwall, 1866, no. vi. p. 165.

Nomeidæ.

Gastrochisma melampus (Richards.) described by Kner, Sitzgsber. Ak. Wiss. Wien, lvi. p. 719.

Scombridæ.

Scomber scomber. Mr. Ambrose's observations on the mackerel of the Nova-Scotian coast, in Proc. & Trans. N. Scot. Inst. Nat. Sc. ii. part 1, pp. 69–74.

Echeneis. M. Baudelot has examined the cephalic disk or anterior dorsal fin. Ann. Sc. Nat. 1867, vii. pp. 153–160, pl. 5; Compt. Rend. 1867, March 18, pp. 625–627 (Ann. & Mag. Nat. Hist. xix. pp. 375, 376).

Echeneis remora. A specimen obtained on the coast of Cornwall. Couch, Journ. Roy. Instit. Cornwall, 1867, p. 361.

Trachinidæ.

Uranoscopus scaber. Dr. Steindachner refers *U. occidentalis* (Agass.) and *U. bufo* (Val.) to this species. Sitzgsber. Ak. Wiss. Wien, 1867, lvi. p. 695.

Uranoscopus marmoratus (C. & V.) described by Mr. Day, Proc. Zool. Soc. 1867, p. 702.

Trachinus draco. Prof. Kner states the highly interesting fact that this fish occurs also at Iquique, on the west coast of South America. Sitzgsber. Ak. Wiss. Wien, lvi. p. 717.

Trachinus araneus. Dr. Steindachner refers *T. radiatus* (C. & V.) and *Pseudotrachinus pardalis* (Blkr.) to this species. Sitzgsber. Ak. Wiss. Wien, lvi. p. 698.

Percis tetracanthus figured by Messrs. Kner & Steindachner, Sitzgsber. Ak. Wiss. Wien, liv. p. 362, fig. 18.

Aphritis urvillii. D. 7 | 17–19. A. 23. L. lat. 61. Günther, Ann. & Mag. Nat. Hist. xx. p. 61.

Champsodon, g. n., Günther, Proc. Zool. Soc. 1867, p. 102. Body compressed, elongate, covered with minute granular scales. Cleft of the mouth oblique, very wide. Eye lateral, directed upwards. Two dorsal fins; ven-

tral fins jugular; pectorals composed of very fine branched rays, united by a thin membrane. Teeth in the jaws in a single series, not closely set, of unequal size, those of the lower jaw longer than the upper ones. Vomerine teeth cardiform, in two separate patches; palatine teeth none. Gill-openings exceedingly wide. None of the bones of the head armed. *Champsodon vorax*, sp. n., Günther, *l. c.*, from the China Sea.—D. 5 | 20. A. 17.

Pseudochromis polyacanthus (Blkr.) described from an example from the Fiji Islands by Kner, Sitzgsber. Ak. Wiss. Wien, lvi. p. 717.

Batrachidæ.

Batrachus pacifici appears to occur also in the Atlantic, as it has been described from a West-African example as a new species, *B. liberiensis*, by Dr. Steindachner, Sitzgsber. Ak. Wiss. Wien, 1867, lv. p. 525, taf. 1. figs. 2 & 3.

Batrachus biaculeatus, sp. n., Steindachner, Verh. zool.-bot. Ges. Wien, 1867, p. 516, from the Cape of Good Hope.

Cottidæ.

Cottus brandti, sp. n., Steindachner, Sitzgsber. Ak. Wiss. Wien, 1867, lv. p. 706, taf. 3. figs. 1 & 2, from the mouth of the Amur.

Trigla hirundo. Dr. Steindachner refers *T. pœciloptera* and *T. capensis* to this species. *L. c.* lvi. p. 683.

Cataphracti.

Cephalacanthus. Dr. Steindachner does not agree with Prof. Canestrini, who regards this fish as the young of *Dactylopterus*; in support of his view he figures young *Dactylopterus* and *Cephalacanthus*. Sitzgsber. Ak. Wiss. Wien, 1867, lvi. p. 693, taf. 2 & 4.

Gobiidæ.

Gobius fluviatilis, var. *nigricans*, with 12 or 13 branched rays in the second dorsal fin, from the Arno. Canestrini, Ann. Soc. Nat. Modena, ii. 1867, p. 10.

Gobius jeffreysii, sp. n., Günther, Ann. & Mag. Nat. Hist. xx. p. 290, pl. 5. fig. C, from the Shetland Islands.

Gobius dolichocephalus, sp. n., Cope, Trans. Am. Phil. Soc. xiii. p. 403, from Vera Cruz. Near *G. mexicanus*. L. lat. 68.

Gobius canivus. Dr. Steindachner demurs to Col. Playfair's opinion with regard to the identity of *G. petersii* with this species. Sitzgsber. Ak. Wiss. Wien, lvi. p. 313. The same fish is described as *Gobius brevifilis* (C. & V.) by Mr. Day, Proc. Zool. Soc. 1867, p. 940.

Gobius krefftii (Steindachner) proves to be identical with *G. criniger* (C. & V.). Ibid. p. 326.

Gobius poeyi, sp. n., Steindachner, *l. c.* p. 350, Barbadoes.

Gobius pavo, sp. n., Steindachner, Sitzgsber. Ak. Wiss. Wien, 1867, lv. p. 715, from the Philippines.

Gobius. Dr. Bleeker describes not less than nine species from Madagascar as new (Arch. Néerland. 1867), viz.:—*G. macrorhynchus*, p. 403; *G. madagasca-*

riensis, p. 405; *G. hypselosoma*, p. 407; *G. melanopterus*, p. 409; *G. isognathus*, p. 411; *G. polyzona*, p. 413; *G. auchenotænia*, p. 415; *G. samberanoensis*, p. 417; *G. vergeri*, p. 418.

Apocryptes polyophthalmus, sp. n., Günther, Ann. & Mag. Nat. Hist. 1867, xx. p. 117, from China.—*Apocryptes punctatus*, sp. n., Day, Proc. Zool. Soc. 1867, p. 941, from Madras.

Eleotris cyanostigma (? Blkr.) described by Playfair from a Seychelle example, Proc. Zool. Soc. 1867, p. 862.

Eleotris lineato-oculatus, sp. n., Kner, Sitzgsber. Ak. Wiss. Wien, lvi. p. 720, fig. 4, Feejee Islands.—*Eleotris lineolatus*, sp. n., Steindachner, ibid. 1867, lv. p. 13, Queensland.

Eleotris brevirostris is described as a new species from Cape York, by Dr. Steindachner, *l. c.* lvi. p. 314.

Amblyopus sieboldii is described as a doubtfully new species from the mouth of the Amur, by Dr. Steindachner, *l. c.* lv. p. 708.

Trypauchen. Ctenotrypauchen (g. n.) *chinensis*, sp. n., Steindachner, *l. c.* lv. p. 530, taf. 6. figs. 3 & 4.—The new genus is cancelled by the author himself on p. 708.

Callionymus maculatus (Bonap.) occurs also at the Shetland Islands. Günther, Ann. & Mag. Nat. Hist. xx. p. 290, pl. v. fig. A.

Trichonotidæ.

Trichonotus (Bl. Schn.). Dr. Steindachner has given also to this genus a new name, *Teniolabrus*, regarding it as a new generic type of Labroids, although the pharyngeal bones were not examined. Sitzgsber. Ak. Wiss. Wien, 1867, lv. p. 713. It cannot be decided at present whether his *Teniolabrus filamentosus* (taf. 3. fig. 5) is really a new species, or merely the young of *T. setigerus*.

Blenniidæ.

Lepidoblennius, g. n., Steindachner, Sitzgsber. Ak. Wiss. Wien, 1867, lv. p. 11. Body scaly; two dorsal fins, the first formed by flexible spines, the second by simple rays; pectoral much developed, with the lower rays simple. A band of villiform teeth in both jaws, the outer series containing stronger teeth.—*L. haplodactylus*, sp. n., p. 12, taf. 1. figs. 2 & 3, from Queensland.

Stichærium, g. n., Günther, Ann. & Mag. Nat. Hist. xx. p. 62. Body elongate, compressed, naked, or with scarcely a trace of rudimentary scales hidden in the skin. Anterior part of the lateral line distinct, near the dorsal profile. Snout short; small teeth in the jaws, without canines; palate apparently toothless. Dorsal fin long, formed by pungent spines only. Ventrals jugular, with two rays; caudal distinct. Gill-openings rather wide, the gill-membranes being broadly united below the throat and quite free from the isthmus. *Stichærium dorsale*, sp. n., p. 63, from Port Jackson.—D. 41. A. $\frac{2}{28}$.

Nologrammus, g. n., Günther, *l. c.* p. 63. Body elongate, compressed, covered with minute scales. Lateral line complete, running along the base of the dorsal fin. Head longish and rather depressed; snout of moderate extent, somewhat pointed; cleft of the mouth wide; a short flat barbel at the symphysis of the lower jaw. Bands of villiform teeth in the jaws and palatine bones, none on the vomer; tongue narrow, long, free. Vertical fins confluent; dorsal and anal with numerous spines, the posterior becoming gradually stiffer

and more pungent than the anterior. Ventrals jugular, close together, reduced to a single bifid ray. The gill-membrane is attached to the isthmus before the ventrals. Pseudobranchiæ well developed. Intestinal tract short, simple, without pyloric appendages. Air-bladder none. *Notograptus guttatus*, sp. n., from Cape York.—D. 69. A. 43.

Petroscirtes longifilis, sp. n., Kner & Steindachner, Sitzgsber. Ak. Wiss. Wien, 1867 (1866), liv. p. 367, fig. 5, from the Samoa Islands.

Salarias. Prof. Kner describes (Sitzgsber. Ak. Wiss. Wien, lvi.) as new species:—*Salarias semilineatus*, p. 722, fig. 5, from the Samoa Islands [is this not a young *S. fasciatus*?]; and *Salarias alboguttatus*, p. 724, fig. 6, from the same locality.

Salarias striato-maculatus is described as a new species from the Mauritius by Messrs. Kner & Steindachner, Sitzgsber. Ak. Wiss. Wien, 1867 (1866), liv. p. 368, fig. 4. [Probably = *S. dussumieri*, C. & V., as indicated by the authors.]

Blennophis webbii is found on the coast of Barbadoes, Steindachner, Sitzgsber. Ak. Wiss. Wien, lvi. p. 354.

Blennophis semifasciatus, sp. n., Kner & Steindachner, *l. c.* liv. p. 369, fig. 6, from Iquique (Western America).

Myxodes cinnabarinus is described as a doubtfully new species by Messrs. Kner & Steindachner, *l. c.* p. 370, from Mejillones (?).

Clinus nigripinnis and *Clinus gilli*, spp. nn., Steindachner, *l. c.* lvi. pp. 351, 352, from Barbadoes.

Cristiceps robustus, sp. n., Günther, Ann. & Mag. Nat. Hist. xx. p. 62, from Melbourne.

Tripterygium hemimelas, sp. n., Kner & Steindachner, *l. c.* liv. p. 371, from the Samoa Islands.

Centronotus fasciatus. Dr. Steindachner has made the very interesting observation that this North-Atlantic species occurs also in the Northern Pacific (mouth of the Amur). *L. c.* lv. p. 700.

Mastacembelidæ.

Mastacembelus cryptacanthus, sp. n., Günther, Proc. Zool. Soc. 1867, p. 102, and Ann. & Mag. Nat. Hist. xx. p. 110, from the Camaroon country, West Africa.—D. 24 to 30 | 100.

Atherinidæ.

Atherina stercus muscarum is a new species from Cape York, described by Dr. Günther, Ann. & Mag. Nat. Hist. xx. p. 64.

Dr. Günther, *l. c.*, describes as new a second species from Cape York, under the name of *Atherina signata*; but it is evidently the same which is described by Prof. Kner as the type of a new genus, *Pseudomugil signifer*, Novara, Fisch. p. 275, tab. 13. fig. 5. The specific name proposed by Prof. Kner has the priority.

Nematocentris nigrans * described as *Strabo nigrofasciatus* by Kner & Steindachner, Sitzgsber. Ak. Wiss. Wien, 1867 (1866), liv. pp. 372, 395, fig. 10. Günther, Ann. & Mag. Nat. Hist. 1867, xx. p. 65.

[?] *Chirostoma beryllinum*, sp. n., Cope, Trans. Am. Phil. Soc. xiii. p. 403, from the Potomac River.—D. 5 | $\frac{1}{11}$. A. $\frac{1}{15}$. L. lat. 36.

* Misprinted "*nigra*" in Ann. & Mag. *l. c.*

MUGILIDÆ.

Mugil. M. Léon Vidal has written on the "Éducation et Conservation du Muge à l'état de stabulation," showing that Grey Mullets can easily be brought up to a marketable size in a state of semidomestication. Bull. Soc. Zool. d'Acclimat. 1867, pp. 190–200.

GASTEROSTEIDÆ.

Gasterosteus aculeatus. The varieties of Sticklebacks of Italy, described under various specific names, belong to one species only, according to Canestrini, Ann. Soc. Nat. Modena, ii. 1867, p. 9.

CENTRISCIDÆ.

Centriscus brevispinis, sp. n., Kner & Steindachner, Sitzgsber. Ak. Wiss. Wien, 1867 (1866), liv. p. 374, fig. 9, from the Samoa Islands.

OPHIOCEPHALIDÆ.

Ophiocephalus stewartii, sp. n., Playfair, Proc. Zool. Soc. 1867, p. 14, pl. 3, from Cachar.—D. 39–40. A. 27. L. lat. 50.

LABYRINTHICI.

Trichogaster fasciatus. A variety from Cachar described by Playfair, Proc. Zool. Soc. 1867, p. 15.

Ctenopoma. Ct. petherici has D. 16–18, and A. 9–10; *Ct. multispine* D. 17–20, and A. 10–11; both found also in West Africa. Günther, Ann. & Mag. Nat. Hist. xx. p. 110.

ACANTHOPTERYGII PHARYNGOGNATHI.

Pomacentrus unifasciatus, sp. n., Steindachner, Sitzgsber. Ak. Wiss. Wien, lvi. p. 326, from Port Jackson.

Glyphidodon unifasciatus, sp. n., Kner & Steindachner, Sitzgsber. Ak. Wiss. Wien, 1867 (1866), liv. p. 375, fig. 3, Samoa Islands.—*Glyphidodon cingulatus*, sp. n., Kner, ibid. lvi. p. 725, from the Samoa Islands.

Glypidodon (Parma) australis is described as a doubtfully new species from Port Jackson, and said to be, perhaps, a variety of *Parma squamipinnis*. Steindachner, *l. c.* lvi. p. 328.

Heliastes hypsilepis sp. n., Günther, Ann. & Mag. Nat. Hist. xx. p. 65, from New South Wales.—*Heliastes cinctus*, sp. n., Playfair, Proc. Zool. Soc. 1867, p. 864, Seychelles.

Crenilabrus rupestris sleeps during the night. Möbius, Zool. Gart. 1867, p. 148.

Ctenolabrus (Tautogolabrus) brandaonis, sp. n., Steindachner, *l. c.* lv. p. 532, Brazil.

Xiphochilus fasciatus, sp. n., Günther, Proc. Zool. Soc. 1867, p. 101, pl. 10, from Cape York, Australia.

Trochocopus darwinii. Pharyngeal teeth figured by Kner, *l. c.* lvi. p. 726, fig. 8.

Cossyphus neilli, sp. n., Day, Proc. Zool. Soc. 1867, p. 560, Madras.

Labrichthys gymnogenys and *laticlavius*. Notes on the coloration, Günther, Ann. & Mag. Nat. Hist. xx. p. 66.—A Chinese [?] example of *L. gymnogenys* described by Steindachner, *l. c.* lvi. p. 342.

Labrichthys cyanotænia (Blkr.) is described by Messrs. Kner & Steindachner as *Chærojulis castaneus*, g. et sp. n., *l. c.* liv. p. 393; see Steindachner, ibid. lvi. p. 332.

Pseudocheilinus hexatænia has been described by Messrs. Kner & Steindachner as *Ps. psittaculus* (sp. n.), *l. c.* liv. p. 376, fig. 7. [The præoperculum is not entire, but finely serrated, as stated by the authors quoted, and as is distinctly visible in a second, larger example, which the British Museum received from the Godeffroy Collection.]

Platyglossus ocellatus is the name proposed by Messrs. Kner & Steindachner for a fish from the Samoa Islands. The authors leave it undecided whether it is *Pl. chrysotænia* or a variety of it. *L. c.* liv. p. 377 (not fig. 8).

Platyglossus poeyi is described as a new species from Surinam by Dr. Steindachner, *l. c.* lvi. p. 355.

Leptojulis bimaculatus is described as a doubtfully new species by Messrs. Kner & Steindachner, *l. c.* liv. p. 378, from Chile.—*Leptojulis pardalis*, sp. n., Kner, *l. c.* lvi. p. 727, fig. 9, from the Feejee Islands.

Pseudoscarus falcipinnis, sp. n., Playfair, Proc. Zool. Soc. 1867, p. 865, fig. 3, Seychelles.—*Pseudoscarus chinensis* is described as a new species by Dr. Steindachner, *l. c.* lv. p. 585, from Ningpo.

Gerres melanopterus (Blkr.) described by Steindachner, *l. c.* lv. p. 518; and *Gerres zebra* (Müll. & Tr.), ibid. p. 527.

Heros troschelii is described as a new species by Dr. Steindachner, *l. c.* lv. p. 528, taf. 4, from Mexico.

ANACANTHINI.

Dr. Gilpin has described the Gadoids of Nova Scotia, Proc. & Trans. Nov. Scot. Instit. Nat. Sc. ii. part 1, pp. 101–111, viz. *Gadus morrhua*, *G. æglefinus*, *G. virens*, and *Phycis americanus*. The Rev. J. Ambrose has published his observations on these fishes, ibid. i. part 4, pp. 33–44, and ii. part 1, p. 67.

Lycodes gracilis, sp. n., Sars, Forhandl. Vid. Selsk. Christian. 1867, pp. 40–45, tab. 1. figs. 1–3, from Drøbak (Norway). [Appears to be most closely allied to *L. perspicillum*, and is entirely destitute of scales.]

Gadus morrhua. Dr. J. A. Smith describes an hermaphrodite specimen, Proc. R. Phys. Soc. Edinb. 1864–65, p. 300; and mentions others with deformed vertebral column, p. 302.

Gadus productus (Ayres) is described by Kner, Novara, Fisch. p. 278.

Motella capensis (Kaup) is recognized by Kner as a distinct species. *L. c.* p. 279, taf. 13. fig. 3.

Motella macrophthalma, sp. n., Günther, Ann. &. Mag. Nat. Hist. xx. p. 290, pl. v. fig. B, from the Shetland Islands.

Dinematichthys mizolepis, sp. n., Günther, *l. c.* p. 66, Cape York.

Genypterus chilensis described by Messrs. Kner & Steindachner, Sitzgsber. Ak. Wiss. Wien, liv. p. 379.

Ammodytes siculus extends to the Shetland Islands. Günther, *l. c.* p. 290.

Congrogadus subducens is described by Kner, *l. c.* p. 280.

Pleuronectidæ. Prof. Schiödte has also examined young examples to ascertain the changes in the position of the eye—a subject to which several naturalists have paid attention (see Zool. Record, i. p. 161, and ii. p. 197). According to his researches, the eye of the blind side not only turns over to the other side, but also backwards to below the dorsal fin. The young of all *Pleuronectidæ* have the eye placed in accordance with their life near the surface of the water. As regards that small semitransparent oceanic form with symmetrical eyes, the author considers it to be a distinct form altogether, for which he proposes the name *Bascanius tædifer*. Naturhist. Tidsskr. v. pp. 269–275; on pl. 11, different stages of development of the eye and *Bascanius* are figured.

Psettodes belcheri. Mr. Cope has received an example from the west coast of Africa, and on comparing it with the figure of *Ps. erumei* in the 'Voy. of the Sulph.,' he found certain differences which induced him to believe that the two fishes are not only specifically but even generically distinct, and he proposes the generic name *Sphagomorus* for the latter. Trans. Am. Phil. Soc. xiii. p. 407. [On examining the distinctive characters mentioned by Mr. Cope with the help of Indian examples, I find them of so dubious a value that the West-African and Indian forms may really prove to be specifically identical. This is not the only instance of identity of West-African and Indian fishes.]

Rhombus punctatus. Dr. J. A. Smith describes an example from the Firth of Forth. Proc. R. Phys. Soc. Edinb. 1864–65, p. 213.

Pseudorhombus. Prof. Kner (Novara, Fisch.) describes *Ps. russellii*, p. 283, *triocellatus* and *vorax*, p. 284.

Pseudorhombus adspersus, sp. n., Steindachner, Sitzgsber. Ak. Wiss. Wien, 1867, lv. p. 709, taf. 2, from the Chinchas Islands.

Rhomboidichthys grandisquama (Schleg.) is described by Kner, *l. c.* p. 285.

Ammotretis rostratus (Gthr.) vel *adspersus*, sp. n.?, is described by Kner, *l. c.* p. 286, taf. 13. fig. 4.

Solea. Prof. Kner (Novara, Fisch.) describes *S. microcephala* (Gthr.), p. 288, *S. maculipinnis* (Agass.), p. 289, *S.* (*Pegusa*) *variolosa*, sp. n., p. 289, from Rio Janeiro (an = *S. margaritifera*, Gthr.?).

M. Capello states that *Solea vulgaris* of the Portuguese coasts varies considerably in the number of the fin-rays, viz. D. 85–95. A. 74–78. Jorn. Sc. math. phys. e nat. Lisb. no. ii. 1867, p. 164.—The same author describes a new species from the same coast, *Solea azevia*, p. 166, fig. 2. (D. 74–84. A. 61–77. P. 6–8. L. lat. 118–126.)

Pardachirus marmoratus (Lac.) described by Kner, *l. c.* p. 290.

Synaptura cinerascens (Gthr.) and *S. zebra* (Bl.) are described by Kner, *l. c.* pp. 291 & 292.—*Synaptura jerreus* (Cuv.) described by Mr. Day, Proc. Zool. Soc. 1867, p. 562.—*Synaptura swinhonis* is described as a new species by Dr. Steindachner, Sitzgsber. Ak. Wiss. Wien, 1867, lv. p. 586, from Hongkong.

Aphoristia ornata (Cuv.) described by Kner, *l. c.* p. 292.

Plagusia marmorata (Blkr.) described by Kner, *l. c.* p. 293.

Cynoglossus. Prof. Kner (Novara, Fisch.) has notes on, or gives descrip-

tions of, *C. xiphoideus* (Gthr.) and *macrolepidotus* (Blkr.), p. 294, *C. quadrilineatus* (Lac.) and *macrorhynchus* (Blkr.), p. 295, and *C. puncticeps* (Rich.), p. 297.—*Cynoglossus lineolatus* is described as a new species by Dr. Steindachner, *l. c.* p. 588, from China.

[*Cynoglossus*] *Plagusia potous* is described by Mr. Day, Proc. Zool. Soc. 1867, p. 561.

PHYSOSTOMI.

Siluridæ.

Clarias batrachus. Remarks by Kner, Novara, Fisch. p. 299.

Clarias gabonensis, sp. n., Günther, Ann. & Mag. Nat. Hist. xx. p. 111.

Gymnallabes, g. n., Günther, *l. c.* p. 111. Distinguished from *Clarias* by having the head covered with soft skin, and confluent vertical fins. *G. typus*, sp. n., pl. 2. fig. A, from Old Calabar.

*Cnidoglanis megastoma** is described as *Chæroplotosus* (g. n.) *decemfilis* (sp. n., an = *limbatus*, C. & V.?) by Kner, Novara, Fisch. p. 300, taf. 13. fig. 1.

Copidoglanis brevidorsalis, sp. n., Günther, Ann. & Mag. Nat. Hist. xx. p. 66, from North and West Australia.

Neosilurus is the name of a new genus proposed by Dr. Steindachner, Sitzgsber. Ak. Wiss. Wien, 1867, lv. p. 14. It belongs to the group of *Plotosina*, and is distinguished by the rudimentary condition or entire absence of the anterior part of the second dorsal fin.—*N. hyrtlii*, sp. n., from Queensland.

Silurus asotus (L.) described by Kner, *l. c.* p. 303.

Wallago attu (Schn.). Remarks by Kner, *l. c.* p. 304.

Silurodon, g. n., Kner, Novara, Fische, p. 305. Very similar to *Silurichthys*. "Cirrhi 6, 2 maxillares, 4 submaxillares; dentes longi acuti 3–4-seriales in ambis maxillis, fascia dent. breviorum continua semilunaris in vomere; p. analis cum caudali, oblique truncata unita." *Silurodon hexanema*, sp. n., taf. 12. fig. 2, from Shanghai?

Cryptopterus latovittatus, sp. n., Playfair, Proc. Zool. Soc. 1867, p. 16, Cachar. —D. 4. A. 56–58.

Eutropius mandibularis, sp. n., Günther, *l. c.* p. 112, Gold Coast.

Pseudeutropius. Mr. Day believes himself to have recognized Sykes's *Hypophthalmus taakree*, which he describes as *Eutropius taakree*, Proc. Zool. Soc. 1867, p. 564. [It is evidently a *Pseudeutropius*.]

Pangasius polyuranodon (Blkr.) described by Kner, *l. c.* p. 306.

Hemibagrus punctatus (Jerdon) described by Day, *l. c.* p. 284.

Pseudobagras fulvidraco (Rich.) described by Kner, *l. c.* p. 308.

Rita pavimentata is described by Mr. Day as *Gogrius* (g. n.!) *sykesii* = *Pimelodus gogra* (Sykes), *l. c.* p. 563.

Pimelodus (*Rhamdia*) *brachypterus*, sp. n., Cope, Trans. Am. Phil. Soc. xiii. p. 404, Mexico.

Arius. Prof. Kner (Novara, Fisch.) has made some remarks on the forms of dentition in this genus, and describes the following species:—*A. thalassinus* (Rüpp.), p. 310, *A. sagor* (H. B.), p. 310, *A. maculatus* (Thunb.), p. 311, and *A. microcephalus* (Blkr.), p. 312.

* I take this opportunity of correcting an error in the diagnosis of this genus (Fish. v. p. 27), where 8 barbels are mentioned instead of 10, which are also very distinctly represented by Richardson.

Arius capellonis is described as a new West-African species by Dr. Steindachner, Sitzgsber. Ak. Wiss. Wien, 1867, lv. p. 523, taf. 2, from Mouravia.

Arius greffei, sp. n., Kner & Steindachner, Sitzgsber. Ak. Wiss. Wien, 1867 (1866) liv. p. 383, fig. 12, Samoa Islands.—*Arius australis*, sp. n., Günther, Proc. Zool. Soc. 1867, p. 103, with woodcut of head, New South Wales.

Genidens cuvieri described by Kner, *l. c.* p. 312, taf. 12. fig. 1.

Osteogeniosus militaris described by Kner, *l. c.* p. 314.

Glyptosternum. Dr. Steindachner, Sitzgsber. Ak. Wiss. Wien, 1867, lv., describes as two new species from Simla *Gl. conirostre*, p. 532, taf. 5. fig. 2 and taf. 6. fig. 4, and *Gl. stolickæ*, p. 533, taf. 5. fig. 1 and taf. 6. fig. 1.

Ageniosus porphyreus, sp. n., Cope, Trans. Am. Phil. Soc. xiii. p. 404, from Surinam.—A. 44.

Plecostomus wertheimeri is described as a new species by Dr. Steindachner, *l. c.* lv. p. 701, taf. 1, Mucuri, Brazil.

Scopelidæ.

Saurida tumbil and *nebulosa* are described by Kner, Novara, Fisch. pp. 315 and 316.

Alepisaurus. Dr. Günther states that this fish was known to Steller, who described it under the name of *Plagyodus*. Ann. & Mag. Nat. Hist. 1867, xix. pp. 185–187.

Scopelus. Dr. Steindachner (Sitzgsber. Ak. Wiss. Wien, 1867, lv.) describes *Sc. asper* (Rich.), p. 589, and, as new species, *Sc. tenuicauda*, p. 590, and *Sc. spinosus*, p. 711, taf. 3. fig. 4, both from China.

Cyprinidæ.

M. Baudelot has examined the tubercles which make their appearance on the integuments of many Cyprinoids during the spawning-season. He is unacquainted with the researches of German ichthyologists into this subject, and comes to the erroneous conclusion that they are the results of a process of moulting in Fishes. Ann. Sc. Nat. 1867, vii. pp. 339–344; or Compt. Rend. 1867, Aug. 5, pp. 247–250.

Mr. E. D. Cope refers the Cyprinoids of Pennsylvania to four tribes, viz. *Cochlobori* with *Exoglossum*, *Cœlophori* with *Ericymba*, *Mesocysti* with *Campostoma*, *Epicysti* with all the remaining genera, Trans. Am. Phil. Soc. xiii. p. 354.

Cyprinus carpio. Hr. Jäckel describes an hermaphrodite Carp in Abhandl. ntrhist. Gesellsch. Nürnberg, iii. p. 245.

Labeo kontius (Jerdon) is described by Mr. Day. Proc. Zool. Soc. 1867, p. 289.

Discognathus lamta. Two of the variations of this species have been described by Mr. Day as *Garra jerdonii*, sp. n., *l. c.* p. 288, and as *Garra alta*, sp. n., p. 340.

Barbus. Prof. Kner (Novara, Fisch.) has described *Barbodes maculatus* (Blkr.), p. 346, *Puntius sophore* (H. B.), p. 347, Puntius modestus, sp. n., from

Madras, p. 348; Labeo cetopsis, sp. n., from Shanghai, p. 351, taf. 15. fig. 2; Pachystomus (?) gobioformis, sp. n., from Java?, p. 353, taf. 15. fig. 4.

Mr. Day (Proc. Zool. Soc. 1867) describes the following species from the Nilgherries:—*Puntius* (*Barbodes*) *gracilis* (Jerdon), p. 290; *Puntius* (*Barbodes*) *dubius*, sp. n., p. 291; *Puntius* (*Barbodes*) *carnaticus* (? Jerdon), p. 292; *Puntius* (*Barbodes*) *grayi*, sp. n. [is identical with *Barbus arulius*], p. 293; and *Puntius arulius* (Jerdon), p. 294.

Barbus camptacanthus is described by Mr. Cope, under the name of *Enteromius potamogalis* (g. et sp. n.). Trans. Am. Phil. Soc. xiii. p. 405.

Labeobarbus aureus is a rather doubtful species described as new by Mr. Cope, *l. c.* p. 406, from South Africa.

[*Pseudogobio*] *Tylognathus sinensis*, sp. n., Kner, *l. c.* p. 354, taf. 15. fig. 5, from Shanghai.

Ceratichthys. Mr. Cope (*l. c.*) gives diagnoses or descriptions of the following species:—*micropogon*, p. 366, pl. 12. fig. 2; *stigmaticus*, *cyclotis*, *biguttatus*, p. 366, pl. 11. fig. 5; *dissimilis*, p. 367, pl. 12. fig. 1; *cataractæ* and *prosthemius* [sp. n., p. 365, which is evidently = *Gobio plumbeus*, Agass.].

Pimephales agassizii is described as a new species by Mr. Cope, *l. c.* p. 394, from the Ohio.

Hyborhynchus notatus is described by Mr. Cope, *l. c.* p. 392, pl. 13. fig. 4.

Campostoma. Mr. Cope figures the peculiar situation of the air-bladder, which is enveloped by the intestine, *l. c.* p. 393, describes *Campostoma dubium*, p. 396, and compares it with allied forms, p. 395.

Ericymba buccata described and figured by Mr. Cope, *l. c.* p. 360, pl. 13. figs. 4, 4*a*.

Pseudorasbora parva (Schleg.) described by Kner, *l. c.* p. 355, taf. 16. fig. 3.

Exoglossum maxillingua described and figured by Mr. Cope, *l. c.* p. 359, pl. 11. fig. 1.

Rhinichthys. Mr. Cope gives descriptions of *Argyreus atronasus*, *l. c.* p. 368, and *Argyreus nasutus*, p. 369, pl. 12. fig. 5.

Phenacobius, g. n. *Cyprinin.* Cope, Proc. Ac. Nat. Sc. Philad. 1867, p. 96. Pharyngeal teeth 4—4, uncinate; mouth very small, inferior; maxillary with a thick, fleshy lip which is enlarged posteriorly, and behind mandible; no barbels; "mandible naked, included." Aspect of *Catostomus*.—*Ph. teretulus*, sp. n., *l. c.*, from Kanawha River, and *Ph. uranops*, sp. n., *l. c.*, from Holston River, Va.

Rasbora neilgherriensis, sp. n., Day, Proc. Zool. Soc. 1867, p. 298.—*Rasbora woolaree*, sp. n., Day, *l. c.* [is evidently the common *R. daniconius*].

Nuria. Mr. Day (*l. c.*) describes two rather doubtful new species, viz. *Esomus malabaricus*, p. 299, from Trichoor, and *Esomus* (*Nuria*) *maderaspatensis*, p. 300, from the Bowany River and Madras [the latter is identical with *Nuria danrica*].—*Nuria danrica* is described by Kner, *l. c.* p. 363, as *Esomus thermoicos* (Val.).

Leuciscus. Mr. Cope has described those North-American species which he refers to *Photogenis* and *Hypsilepis*. They are twelve in number, five of which are described as new. Proc. Acad. Nat. Sc. Philad. 1867, pp. 156–166. The Recorder has received typical specimens through the author's kindness; so that nearly all (with the exception of *Photogenis leuciodus* and *scabri-*

ceps) could be introduced into the 7th volume of the 'Catalogue of Fishes.' The author describes also another new species, *Cyprinella cercostigma*, from Pearl River, Mississippi, p. 157.

Leuciscus. Mr. Cope has given diagnoses or descriptions of the following species in Trans. Am. Phil. Soc. xiii.:—*Hypsilepis kentukiensis*, p. 371, pl. 11. fig. 3; *Hypsilepis cornutus*, p. 372, and *diplæmia*, p. 373; Phoxinus neogæus, sp. n., p. 375; *Clinostomus proriger*, p. 375; *Clinostomus funduloides*, p. 376, pl. 13. fig. 2; *Clinostomus margarita*, p. 377, pl. 13. fig. 1; *Photogenis leucops*, p. 379, pl. 12. fig. 6; Photogenis ariommus, sp. n., and Photogenis spilopterus, sp. n., p. 378; Hybopsis tuditanus, sp. n., p. 381; *Hybopsis hudsonius*, p. 386, pl. 12. fig. 3; *Hybopsis stramineus*, p. 381; *Hybopsis procne*, p. 385, pl. 11. fig. 2; *Hybopsis volucellus*, p. 381; Hybopsis hæmaturus, sp. n., p. 382, pl. 12. fig. 4; Hybopsis fretensis, sp. n., p. 382; *Hybopsis plumbeolus*, p. 382; Hybopsis chalybæus, sp. n., p. 383; *Hybopsis heterodon*, p. 382; Hybopsis bifrenatus, sp. n., p. 384; *Alburnellus rubrifrons*, p. 388, pl. 13. fig. 3; Alburnellus jaculus, sp. n., p. 387; Alburnellus arge, sp. n., p. 388; *Chrosomus erythrogaster* and *eos*, p. 391.—*Leuciscus gardoneus* (C. & V.) is said to be a *Chondrostoma* (p. 395); but this requires confirmation.

Leucosomus pulchellus is described and figured by Cope, *l. c.* p. 362, pl. 10. fig. 1, under the name of *Semotilus rhotheus*; also *Semotilus corporalis*, p. 363, pl. 10. fig. 2.

Leuciscus basak (Heck.) is not specifically distinct from *L. aula*, according to Canestrini, Ann. Soc. Nat. Modena, ii. 1867, p. 7.

[*Rhodeus*] *Pseudoperilampus* (?) * *ocellatus*, sp. n., Kner, *l. c.* p. 365, taf. 15. fig. 6, from Shanghai.

[*Danio*] *Paradanio neilgherriensis*, sp. n., Day, Proc. Zool. Soc. 1867, p. 206.

Barilius rugosus, sp. n., Day, *l. c.* p. 204, Neilgherries.

Squaliobarbus curriculus (Rich.) has been described by Kner as *Sarcocheilichthys teretiusculus* (Bas.), Novara, Fisch. p. 356.

Opsarius? elongatus, sp. n., Kner, *l. c.* p. 358, taf. 15. fig. 1, from Shanghai. [This appears to be the type of a distinct genus, which the Recorder has named *Ochetobius*, see Fish. vii. p. 298.]

Hypophthalmichthys nobilis has been described by Prof. Kner as *H. mandschuricus* (Basil.) [the synonymy added being erroneus]. Novara, Fisch. p. 350.

[*Elopichthys*] *bambusa* (Rich.) described by Kner, *l. c.* p. 357.

[*Chanodichthys*] *pekinensis* (Basil.) and *leucisculus* (Basil.) are described by Kner, *l. c.* p. 360, taf. 15. fig. 3, and p. 362.

Culter. Prof. Kner (*l. c.*) has described two species of this genus, viz. *C. recurviceps* (Rich.), under the name of *C. erythropterus* (Basil.), p. 360,

* Prof. Kner, who has taken Bleeker's system as a guide in the determination of Cyprinoids, has been several times very unfortunate in not referring the species to the proper genera. However, this is less his fault than that of the system followed, inasmuch as, by the principle of using the most insignificant characters for the basis of genera and groups, the means of expressing natural affinities are destroyed, and determination becomes more or less impossible to one who has not a large series of types at his command.

taf. 14. fig. 4; and another, which is rather doubtful, as *C. alburnus* (Basil.), p. 362.

Chela argentea, sp. n., Day, Proc. Zool. Soc. 1867, p. 301, from the Bowany River.

Cachius atpar (Ham. Buch.) is described by Mr. Day as *Paradanio elegans* (sp. n.), *l. c.* p. 297.

Homaloptera brucei (Gray) has been rediscovered in the Wynaad, and is described by Mr. Day, *l. c.* p. 348.

Nemachilus. Mr. Day (*l. c.*) describes the following new species from the Nilgherries:—*Nemacheilus güntheri*, p. 285; *Nemacheilus semiarmatus*, p. 286; and *Nemacheilus denisoni*, p. 287.—*Nemacheilus striatus*, sp. n., Day, *l. c.* p. 347, from the Wynaad.

[*Nemachilus*] *Platacanthus maculatus* is described as a new species from Madras by Mr. Day, *l. c.* p. 941.

Characinidæ.

Nannocharax, g. n., Günther, Ann. & Mag. Nat. Hist. xx. p. 112. Dorsal fin short, placed in the middle of the body, above the ventrals; anal short. Body elongate, covered with scales of moderate size; belly rounded. Cleft of the mouth very small, similar to that of a *Coregonus*; intermaxillary and mandible with a single series of notched incisors. Nostrils close together. Gill-openings rather narrow, the gill-membrane being grown to the isthmus. This genus is the type of a separate group, Nannocharacina, intermediate between *Anostomatina* and *Tetragonopterina*.—*Nannocharax fasciatus*, sp. n., pl. 3. fig. A, from the Gaboon. To this genus belongs also *Coregonus niloticus* (De Joannis).

Alestes. Dr. Günther (*l. c.*) describes three new West-African species:—*Alestes macrophthalmus* and *Alestes tæniurus*, p. 113, and *Alestes leuciscus*, p. 114. He reunites *Brachyalestes* with this genus.

Sarcodaces odoë. L. lat. 50. Günther, *l. c.* p. 114.

Xiphorhamphus oligolepis is described as a new species from the La Plata River by Dr. Steindachner, Sitzgsber. Ak. Wiss. Wien, lvi. p. 339.—D. 11. A. 30. L. lat. 75. Canine teeth.

Distichodus notospilus, sp. n., Günther, *l. c.* p. 114, Gaboon.

Xenocharax, g. n., Günther, *l. c.* p. 114. (Group Crenuchina.) Dorsal fin rather long, placed in the middle of the length of the body, above the ventrals. Anal not elongate. Body compressed, rather elevated, covered with rather small scales; lateral line present; belly rounded. Cleft of the mouth rather wide. Intermaxillary and mandible with a double or treble series of small bicuspid teeth; a few teeth in the maxillary. Nostrils close together. Gill-openings wide; the gill-membranes not attached to the isthmus. Gill-rakers long, setiform. *Xenocharax spilurus*, sp. n., pl. 3. fig. B, from the Gaboon.—D. 18. A. 13. L. lat. 73.

Cyprinodontidæ.

Haplochilus. Mr. Day distinguishes two species of "*Panchax*" in the Madras Presidency, one is described by him as the *P. rubrostigma* of Jerdon, the other as *P. argenteus*, sp. n., Proc. Zool. Soc. 1867, p. 706.

Haplochilus (*Panchax*) *rubropunctatus* is described as a new species from China and Ceylon by Dr. Steindachner, Sitzgsber. Ak. Wiss. Wien, lvi. p. 345.

Scombresocidæ.

Belone. The specimens collected on the 'Novara' expedition are determined and described by Professor Kner as *B. liurus* (Blkr.), p. 321; *B. cylindrica* (Blkr.), p. 321; *B. schismatorhynchus* (Blkr.), p. 322; and *B. timucu* (C. & V.), p. 322.

Hemirhamphus. The specimens collected on the 'Novara' expedition are determined and described by Prof. Kner as *H. dussumieri* (C. & V.), p. 322; *H. georgii* (C. & V.), *H. quoyi* (C. & V.), *H. gaimardi* (C. & V.), and *H. russellii* (C. & V.), p. 323; *H. erythrorhynchus* (C. & V.), and *H. brownii* (C. & V.), p. 324.

Arrhamphus sclerolepis. Also this fish has received a new name by Dr. Steindachner, viz. *Hemirhamphus krefftii*, Sitzgsber. Ak. Wiss. Wien, 1867, lvi. p. 332, taf. 1; his specimen is said to be from Port Jackson.

Exocœtus. The specimens collected on the 'Novara' expedition are determined and described by Prof. Kner as *E. unicolor* (C. & V. ?), p. 325, and *E. evolans* (L. ?), p. 326.

Exocœtus atrodorsalis, sp. n., Günther, Ann. & Mag. Nat. Hist. xx. p. 67, from Cape York.—*Exocœtus lamellifer*, sp. n., Kner & Steindachner, Sitzgsber. Ak. Wiss. Wien, 1867 (1866), liv. p. 384, fig. 11, from the Pacific.

Salmonidæ.

Prof. Rasch has communicated to the Society of Sciences of Christiania the results which he obtained by artificially crossing different species of Salmonidæ. Förhandl. Vid. Selsk. Christian. 1867, pp. 326–327 :—

1. Ova of the Sea- (or River-) Trout, impregnated by the milt of the River- (or Sea-) Trout, are developed in the same regular manner as if impregnated by the milt of the same species. The hybrids produced were again fertile. Therefore he comes to the conclusion that Mag. Widegren's opinion with regard to the specific identity of these fishes is correct.

2. Of ova of Charr impregnated by milt of Trout, 30–40 per cent. are developed, and many young fish perish after exclusion.

3. Of Trout-ova impregnated by milt of Charr, only 10 per cent. are developed, and many of the young fish are misshaped.

4. Salmon-ova impregnated with Trout-milt yielded 40 per cent. young fish, and none whatever when impregnated with the milt of Charr.

5. The ova of a female fish, which appeared to be a hybrid between the Trout and Charr, were impregnated by the milt of a Trout, but no signs of development were visible.

Prof. Rasch promises to continue these preliminary experiments.

Retropinna richardsonii (Gill) is described by Kner, Novara, Fisch. p. 318.

Galaxidæ.

Galaxias. Prof. Kner (Novara, Fisch.) describes *G. fasciatus* (C. & V.),

p. 319, and *G. forsteri* (C. & V.), p. 320 [adding to the latter a synonymy entirely erroneous].

Galaxias waterhousii, sp. n., Krefft, Proc. Zool. Soc. 1867, p. 943, South Australia.

Neochanna, g. n., Günther, Ann. & Mag. Nat. Hist. xx. p. 305, distinguished from *Galaxias* by the absence of ventral fins. *N. apoda*, sp. n., Günther, *l. c.* p. 306, pl. 7, from New Zealand.

Mormyridæ.

Mormyrus. Dr. Günther (Ann. & Mag. Nat. Hist. xx.) describes several new species from the west coast of Africa:—*M. zanclirostris*, p. 115, pl. 2. fig. B; *M. microcephalus*, p. 115; *M. moorii*, *M. ussheri*, and *M. walkeri*, p. 116, pl. 3. fig. C. He also remarks that *Isichthys henryi* (Gill) belongs to this genus.

Mormyrops longiceps, sp. n., Günther, *l. c.* p. 117, Gold Coast.

Esocidæ.

Esox. Mr. Cope (Trans. Am. Phil. Soc. xiii. p. 407) distinguishes seven species in the waters of Middle North America, viz. *E. fasciatus* (Dekay)= *E. ornatus* (Girard), *E. porosus*, apparently a new name for *E. cypho* (Cope), *E. umbrosus* (Kirtl.), *E. reticulatus* (Les.), *E. depraudus* (Les.), *E. lucius* (L.), and *E. nobilior* (Thomps.). These species are shortly characterized, but the synonymy is very meagre.

Esox lucius. M. Carbonnier has published observations on the Pike; he explains the great difference in size in young examples by the observation that the males are the smaller, and the females the larger individuals. Bull. Soc. d'Acclimat. 1867, pp. 574–577.

Gonorhynchidæ.

Gonorhynchus brevis is described as a doubtfully new species by Kner, Novara, Fisch. p. 342, taf. 16. fig. 1, from the island of St. Paul? [It is not distinct from *G. greyi*.]

Clupeidæ.

Engraulis. Kner (Novara, Fisch.) describes the following species:—*E. dentex* (C. & V.), *E. atherinoides* (C. & V.), and *E. brownii* (C. & V.), p. 332; *E. encrasicholoides* (Blkr.), *E. dussumieri* (C. & V.), and *E. grayi* (Blkr.), p. 333; *E. hamiltonii* (C. & V.) and *E. rhinorhynchus* (Blkr.), p. 334.

Engraulis ringens (Jenyns) is described as *E. nasus* (sp. n.) by Messrs. Kner & Steindachner, Sitzgsber. Ak. Wiss. Wien, 1867 (1866), liv. p. 388, fig. 17.

Engraulis duodecim, sp. n., Cope, Trans. Am. Phil. Soc. xiii. p. 405, New Jersey.

Coilia grayi (Rich.) described by Kner, *l. c.* p. 335.

Chatoëssus. Prof. Kner (*l. c.*) has described *Ch. punctatus* (Schleg.), p. 336, *Ch. chacunda* (H. B.), and *Ch. selangkat* (Blkr.), p. 337.

Clupea. Prof. Kner (Novara, Fisch.) describes, or has remarks on, *Spratella tembang* (Blkr.) and *Spratella fimbriata* (C. & V.), p. 329; *Clupea thrissa* (L.), p. 330; *Alosa aurea* (Spix) = *Cl. fimbriata* (Jen.) and *Alosa ilisha* (H. B.), p. 331.

Clupea harengus. Mr. Andrews, on speaking on the Herring-fisheries of

Ireland, has made some remarks on the periods and habits of spawning of the Herring on the Irish coasts. Journ. R. Dublin Soc. no. xxxv. 1866, p. 17. —Mr. Ambrose's observations on the Herring of the Nova-Scotian coast, in Proc. & Trans. N. Scot. Inst. Nat. Sc. ii. pt. 1. pp. 74–76.

Clupea sagax (Jenyns) is described by Messrs. Kner and Steindachner as *Alausa fimbriata* (sp. n.), Sitzgsber. Ak. Wiss. Wien, 1867 (1866), liv. p. 386, fig. 15.

Clupea melanosticta is enumerated among the food-fishes of Victoria by Prof. M'Coy, Ann. & Mag. Nat. Hist. 1867, xx. p. 188. [This is evidently an erroneous determination.]

[*Clupea*] *Rogenia argyrotænia* (Blkr.) described by Kner, *l. c.* p. 328.

Pellona grayana (C. & V.) described by Kner, *l. c.* p. 328.

[*Spratelloides*] *Alausa alburnus*, sp. n., Kner and Steindachner, *l. c.* p. 387, fig. 16, from Valparaiso.

Dussumieria acuta (C. & V.) described by Kner, Novara, Fisch. p. 330.

Elops saurus. Remarks by Kner, *l. c.* p. 338.

Megalops indicus. Remarks by Kner, *l. c.* p. 339.

Chanos orientalis (Kuhl) and *Ch. chloropterus* (C. & V.) are described by Kner, *l. c.* p. 341.

Muræniдæ.

Dr. L. Jacoby (see above, p. 150) has examined the bones of the upper jaw of the Murænoids. In opposition to the opinions held by Cuvier and Owen, and adopted by most subsequent authors, he defends the view taken by Meckel and Peters, viz. that the lateral portion of the upper jaw is formed by the maxillary bone only, the front part being the intermaxillary, which coalesces with the vomer and ethmoid, but which may always be more or less distinctly distinguished. The treatise is illustrated by outline-figures of the jaws of some of the principal genera.

Anguilla. Prof. Kner (Novara, Fisch.) has described the following species:—*A. malgumora*, p. 367; *A. sidat*, p. 368; *A. marmorata* and *A. moa*, p. 369; *A. japonica* and *A. tenuirostris*, p. 370.

Anguilla reinhardtii, sp. n., Steindachner, Sitzgsber. Ak. Wiss. Wien, 1867, lv. p. 15, with woodcut, from Queensland.

Muræsox. Prof. Kner (*l. c.*) has described *M. singapurensis*, p. 371, *M. talabon*, p. 372, and *M. bagio*, p. 373.

Uroconger lepturus described by Kner, *l. c.* p. 373.

Ophisoma habenatus (Rich.?) described by Kner, *l. c.* p. 374, taf. 13. fig. 2; also *O. anagoides* (Blkr.), p. 375.

Cirrhimuræna tapeinoptera described by Kner, *l. c.* p. 376.

Ophichthys magnioculis and *O. cephalozona* are described by Kner, *l. c.* pp. 376, 377.

Ophichthys grandimaculata, sp. n., Kner & Steindachner, Sitzgsber. Ak. Wiss. Wien, 1867 (1866), liv. p. 389, fig. 13, from Peru.

Liuranus colubrinus described by Kner, Novara, Fisch. p. 378.

Ophisurus fasciatus described by Kner, *l. c.* p. 379.

Pisoodonophis cancrivorus described by Kner, *l. c.* p. 379.

Sphagebranchus orientalis described by Kner, *l. c.* p. 380.

Sphagebranchus longipinnis, sp. n., Kner & Steindachner, Sitzgsber. Ak. Wiss. Wien, 1867 (1866), liv. p. 390, fig. 14, from the Samoa Islands.

Pœcilophis variegata described by Kner, Novara, Fisch. p. 381.

Priodonophis minor and *P. ocellatus* are described by Kner, *l. c.* pp. 382, 383.

Gymnothorax. Prof. Kner (*l. c.*) describes the following species:—*G. pictus* and *cancellatus*, p. 384, *richardsonii* and *till*, p. 385.

Thyrsoidea macrurus described by Kner, *l. c.* p. 386.

Gymnomuræna. Prof. Kner (*l. c.*) describes *G. tigrina*, p. 387, *G. microptera* and *xanthoptera*, p. 388.

Moringua macrochir described by Kner, *l. c.* p. 389.

PLECTOGNATHI.

Ostracion punctatus and *O. nasus* are described by Kner, *l. c.* pp. 403, 404.

Diodon rivulatus described by Kner, *l. c.* p. 405.

Tetrodon. Prof. Kner (*l. c.*) has described *T. honckenii* and *oblongus*, p. 406, *T. lunaris* and *richei*, p. 407.

Tetrodon (*pustulatus*, Murray?). Dr. J. A. Smith describes a species from Old Calabar, Proc. R. Phys. Soc. Edinb. 1864–65, p. 268.

Crayracion. Prof. Kner (*l. c.*) has described *C. fluviatilis, erythrotænia*, and *immaculatus*, p. 408, *C. lineatus, hamiltonii*, and *pantherinus*, p. 409, and *C. spengleri*, p. 410.

Triacanthus brevirostris and *blochii* are described by Kner, Novara, Fisch. pp. 393 & 394.

Monacanthus. Prof. Kner (*l. c.*) has described *M. chinensis*, p. 395, *M. piraaca*, p. 396, and *M. frauenfeldii*, sp. n. (?), p. 397, from Sydney.—The last species is said to be identical with *M. vittatus* (Soland.). Steindachner, Sitzgsber. Ak. Wiss. Wien, 1867, lvi. p. 335.

Monacanthus (*Paramonacanthus*) *knerii*, sp. n., Steindachner, *l. c.* lv. p. 591, China.—*Monacanthus helleri*, sp. n., Steindachner, *l. c.* p. 712, taf. 3. fig. 3, China.

Balistes. Prof. Kner (Novara, Fisch.) has described the following species:—*B. stellatus*, p. 398, *Balistapus verrucosus* and *aculeatus*, p. 399, *B. lineatus, conspicillum*, and *frenatus*, p. 400, and *B. maculatus*, p. 401.

Balistes liberiensis, sp. n., Steindachner, *l. c.* lv. p. 525, taf. 3, Monravia.

Amanses scopas. Messrs. Kner & Steindachner direct attention to a remarkable sexual difference in the armature of the tail of this species. It is probably identical with *Balistes hispidus* (L.). Sitzgsber. Ak. Wiss. Wien, liv. p. 390.

LOPHOBRANCHII.

Hippocampus hudsonius. The Rev. S. Lockwood describes the expulsion of the young from the pouch of the male parent in Amer. Naturalist, i. 1867, pp. 225–234. He thinks that the embryos are nourished by the fat deposited in the walls of the pouch, which become considerably thinner as the embryos grow. [It is more probable that the walls become thinner in consequence of the increasing pressure of the growing contents of the pouch.]

Hippocampus punctulatus described by Kner, Novara, Fisch. p. 390.

Syngnathus. Prof. Kner describes *S. fasciatus* and *Ichthyocampus pondicerianus*, *l. c.* p. 391.

Doryichthys. Dr. J. A. Smith describes a specimen from Old Calabar, sp. indeterm. Proc. R. Phys. Soc. Edinb. 1864–5, p. 227.

Doryichthys bernsteini, sp. n., Bleeker, Arch. Néerland. 1867, p. 398, from Halmaheira.

GANOIDEI.

Prof. KNER examines the characters by which this order has been defined, and shows that not one is generally applicable to the various forms referred to it. He says that the order, as introduced into the system, is not a natural unity, that it must be more limited, if it be kept up, and that its establishment not only did not advance the development of a natural system, but impeded it. The author does not propose an emendation of the system, but indicates that systematists should be more careful in observing Linnean principles in characterizing systematic groups, and pay more regard to the genesis of the various forms. Sitzgsber. Ak. Wiss. Wien, liv. pp. 519–536.

ELASMOBRANCHII.

Scyllium catulus. The incubation of the eggs lasts about nine months. Coste, Compt. Rend. 1867, January 21, p. 99; or Ann. & Mag. Nat. Hist. xix. p. 227.

Chiloscyllium phymatodes (Blkr.) is distinct from *Ch. tuberculatum.* Kner, Novara, Fisch. p. 413.

Ginglymostoma caboverdianus (name inadmissible), sp. n., Capello, Jorn. Sc. math. phys. e nat. Lisb. no. ii. 1867, p. 167, fig. 1, Cape Verde Islands.

Crossorhinus dasypogon, sp. n., Bleeker, Arch. Néerland. 1867, p. 400, from Waigiou.

Carcharias (*Prionodon*) *mülleri* is described as a new species from the West Indies by Dr. Steindachner, Sitzgsber. Ak. Wiss. Wien, lvi. p. 356.

Prionodon. Prof. Kner has made some remarks on *P. dussumieri* and *P. sorrah.* Novara, Fisch. p. 414.

Leius ferox (Kner). Prof. Kner says that it is not identical with *Læmargus labordii* (Q. & G.). Sitzgsber. Ak. Wiss. Wien, 1867 (1866), liv. p. 393.

Hemigaleus macrostoma described by Kner, Novara, Fisch. p. 415.

Pseudotriakis microdon, g. n. (*Scylliid.*) & sp. n., Capello, Jorn. Sc. math. phys. e nat. Lisb. iv. p. , pl. 5. fig. 1, Portugal.

Triakis maculatus, sp. n. ?, an *Tr. scyllium*, var. ?, Kner & Steindachner, Sitzgsber. Ak. Wiss. Wien, 1867 (1866), liv. p. 391, hab. —?

Acanthias vulgaris. Note on the brain by J. Sander, Sitzgsber. Ges. ntrf. Freund. Berlin, 1867-68, p. 20.

Machephilus is described by Mr. Johnson as a new genus of Spinacoid Sharks, differing from *Centrophorus* in having a mesial tooth, consisting of an upright equilateral cusp on a quadrate base, in the lower jaw. *Machephilus dumerilii*, sp. n., Johnson, Proc. Zool. Soc. 1867, p. 713, from Madeira.

Rhinobatus annulatus and *undulatus* are described by Kner, Novara, Fisch. pp. 416 & 417.

Narcine timlei and *brasiliensis* are described by Kner, Novara, Fisch. pp. 417 & 418.

Raja capensis described by Kner, *l. c.* p. 419.

Chimæra affinis, sp. n., Capello, Jorn. Sc. math. phys. e nat. Lisb. iv. p. pl. 3. fig. 1, Portugal.

CYCLOSTOMATA.

Petromyzon marinus. Some physiological observations by Bert, Ann. Sc. Nat. 1867, vii. pp. 371–373.

Petromyzon, sp. ?, known from the *Ammocœtes*-form only, from New Zealand, described by Kner, Novara, Fisch. p. 421.

LEPTOCARDII.

Amphioxus lanceolatus. Dr. Kowalevsky's researches into its development (see Zool. Record, iii. p. 160) have appeared in full in Mém. Ac. Sc. St. Pétersb. 1867, xi. no. 4, with three plates. The eggs are expelled by the opening of the mouth.

M. Bert has made researches into the minute anatomy of this creature. He denies that the dorsal cord is formed of cells or disks; its structure consists of lamellæ composed of semisolid amorphous material. *Amphioxus* is a definitive form, the author having witnessed the ejection of semen. Lost parts are not regenerated. M. Bert has also observed the effects of several chemicals on the living animal. Compt. Rend. 1867, Aug. 26, pp. 364–367 Ann. & Mag. Nat. Hist. xx. pp. 302-304.

ARACHNIDA

BY

W. S. Dallas, F.L.S., C.M.Z.S., &c.

A. *Work in progress.*

Koch, L. Die Arachniden-Familie der Drassiden. Siebentes Heft, pp. 305–352, Taf. 13 & 14: 1867. 8vo.

Of this work only the seventh part has reached the Recorder as published in 1867. It will be completed in two more parts.

B. *Separate Work.*

Ohlert, E. Die Araneiden oder echten Spinnen der Provinz Preussen. 12mo, pp. 172, with 2 plates. Leipzig: 1867.

This is a useful little manual of the Spiders of the province of Prussia, containing a clear general account of the organization of the animals belonging to this order, and a systematic description of the species inhabiting Prussia proper. The work is of value as containing good characters of the families, which are wanting in some treatises of higher pretensions. The figures on the two plates represent the arrangement of the eyes in the different genera. The nomenclature of the species differs considerably from that adopted by Menge, and is chiefly founded upon Koch's 'Arachniden.'

C. *Papers published in Journals.*

Ausserer, A. Beobachtungen über Lebensweise, Fortpflanzung und Entwicklung der Spinnen. Zeitschr. des Ferdinandeums &c. 3te Folge, Heft xiii. pp. 181–209.

Contains a general account of the habits and development of Spiders, including some original observations.

——. Die Arachniden Tirols nach ihrer horizontalen und verticalen Verbreitung. I. Verhandl. zool.-bot. Gesellschaft in Wien, Band xvii. pp. 137–170, Taf. 7 & 8.

Consists chiefly of a list of the larger Tyrolese Arachnida (Araneida, Phalangiidæ, and Scorpionidæ), with a few introductory remarks and descriptions of some new species.

Bilimek, D. Fauna der Grotte Cacahuamilpa in Mexiko. Verhandl. zool.-bot. Ges. in Wien, Band xvii. pp. 901–906: Three new species of Arachnida described (pp. 905–907).

Blackwall, J. Remarks on the Falces and Maxillæ of Spiders. Annals & Mag. Nat. Hist. 3rd ser. vol. xix. pp. 258–259, pl. 10: April 1867.

——. Descriptions of several Species of East-Indian Spiders, apparently new or little known to Arachnologists. Ibid. pp. 387–394: June 1867.

——. Notes on Spiders, with descriptions of several Species supposed to be new to Arachnologists. Annals & Mag. Nat. Hist. 3rd ser. vol. xx. pp. 202–213: September 1867.

Canestrini, G. Intorno agli Aracnidi dell' Ordine Araneina osservati nel Veneto e nel Trentino. Commentario della Fauna, Flora e Gea, &c.: October 1867.

A list of species of true Spiders observed in the districts of Venice and Trent.

Fritsch, Gustav. (See "Insecta.")

Giebel, C. Zur Schweizerischen Spinnenfauna. Zeitschr. für die gesammten Naturwissenschaften, Band xxx. pp. 425–443: December 1867.

Araneida and Phalangiidæ.

Guyon, —. Sur un phénomène produit par la piqûre du Scorpion. Comptes Rendus, lxiv. pp. 1001–1003.

Hill, R. Notes on the Natural History of the Scorpion. Annals Lyceum Nat. Hist. New York, vol. viii. pp. 387–393: 1867.

Kempelen, L. von. Bemerkungen über Spinnen im Allgemeinen und eine Untersuchung von *Drassus lapidicola* insbesondere. Verhandl. zool.-bot. Gesellsch. Wien, xvii. pp. 545–550.

——. *Thysa pythonissæformis*. Eine neue Gattung und Art. Ibid. pp. 607–610, taf. 14B.

Koch, L. Beschreibungen neuer Arachniden und Myriapoden. Ibid. pp. 173–250.

Descriptions of species obtained by MM. Godeffroy of Hamburg, partly from Queensland and partly from the Samoa Islands.

——. Zur Arachniden- und Myriapoden-Fauna Süd-Europa's. Ibid. pp. 857–900.

Descriptions of species collected by Erber.

Krohn, A. Ueber die Anwesenheit zweier Drüsensäcke im Cephalothorax der Phalangiden. Archiv für Naturg. 1867, pp. 79–83; translated in Ann. & Mag. Nat. Hist. 4th ser. vol. i. pp. 87–90.

In this paper Krohn indicates that the two spots on the cepha-

Trabrax of the Phalangiidæ, regarded by Treviranus as lateral eyes, are really glandular sacs, the structure of which he describes.

Lincecum, G. The Tarantula. American Naturalist, vol. i. pp. 409–411.

Moriggia, —. Descrizione di una escrescenza cornea sviluppatasi sulla mano di una donna. Atti Accad. Sci. Torino, vol. i. pp. 449–463, with a plate.

A description of a horny excrescence containing Acari.

Plateau, Félix. Observations sur l'Argyronète aquatique. Bull. Acad. Sci. de Belgique, tome xxiii. pp. 96–126, with a plate; reprinted in Ann. Sci. Nat. 5e sér. tome vii. pp. 345–368, pl. 1; abstract in Comptes Rendus, tome lxiv. pp. 627–629, translated in Ann. & Mag. Nat. Hist. 3rd ser. vol. xix. pp. 283–286.

Simon, Eugène. Sur trois Araignées nouvelles. Rev. et Mag. de Zoologie, 1867, pp. 15–24.

These species belong to the genera *Arachnoura* (Vinson), *Micrathena* (Gund.), and *Trithena* (g. n.), all of which are characterized in detail by Simon.

Terby, F. Sur le procédé qu'emploient les Araignées pour relier des points éloignés par un fil. Bull. Acad. Sci. de Belgique, tome xxiii. pp. 274–298, with a plate.

Thorell, T. Om *Aranea lobata*, Pallas (*A. sericea*, Oliv.). Œfvers. af Kongl. Vet.-Akad. Förhandl. 1867, pp. 591–596.

G. Fritsch, in describing the general characters of the Insect-fauna of South Africa (Berl. ent. Zeitsch. 1867, p. 247), attributes a very prominent place to the Arachnida, to several forms of which he specially refers. Large species of *Mygale* occur, the bite of which is said to produce considerable inflammation; and that of a large species of *Lycosa* inhabiting the houses, and the middle legs of which extend about six inches across, is said to be also attended with similar results. Species of *Galeodes* occur, and are perfectly ready to make use of their weapons; but the author did not learn what were the consequences of their bite. The largest specimens found by himself measured about 1½ inch in length; but he saw individuals of 3 inches long in the possession of a farmer in Worcester district. The author adds some remarks on the Scorpions and *Epeïridæ* observed by him.

In a paper on insects met with at sea and on board ship (see "Insecta"), Frauenfeld enumerates a few species of Arachnida (Verh. zool.-bot. Ges. in Wien, xvii. pp. 434 and 460–463). The species noticed are:—*Hyalomma hispanum*, taken from a *Lanius ruficeps* (Linn.) captured near Messina; a new *Obisium*; *Pholcus nemastomoides* (Koch); 2 new species of *Rhipicephalus*, and 2 of *Theridium*.

Von Martens (Preuss. Exped. nach Ost-Asien, Zool. p. 12) briefly n the occurrence of Spiders in Madeira, and states that Scorpions were nei seen nor heard of there by him. No Scorpions occur in Japan (*l. c.* p. 130

ARANEIDA.

Blackwall publishes some observations on the presence of teeth and spines on the falces and maxillæ of Spiders (Ann. & Mag. Nat. Hist. 3rd ser. xix. pp. 258–259). He remarks that the so-called teeth on the margins of the groove on the basal joint of the falces in which the terminal joint is received cannot be regarded as true teeth, as those organs are employed only in seizing prey, and adds that such processes occur on the falces of the *Mygalidæ*, where their presence has been denied by some authors. Blackwall also states that the minute spines described by Miss Staveley on the maxillæ of certain Spiders may assist in the retention of insects, but cannot act efficiently as a masticatory apparatus; he describes certain spines irregularly grouped on the maxillæ and the apex of the lip of some *Mygalidæ* which may serve for a similar purpose, and also indicates the presence in *Mygale zebra* of a group of spines on the upper surface of the maxillæ which appear to be organs of mastication. The maxilla and lip of *Mygale ursina* are represented (pl. 9. figs. 1, 2), and the maxilla of *M. zebra* (pl. 9. fig. 3).

Ausserer (Zeitschr. des Ferdinand. 3te Folge, xiii. pp. 181–209) publishes an account of the habits and development of the Araneida, in which he describes the general mode of life of these animals, and treats of their reproduction and development. He discusses the means by which Spiders are able to emit a thread which may serve them as a bridge, describes the construction of the geometrical nets in some detail, and notices the process by which Spiders are enabled to ascend into the air. From his own observations he seems inclined to think that the aërial excursions are chiefly performed by males. The author describes in considerable detail the act of copulation in several species, especially *Dictyna benigna* (Walck.) and *Linyphia triangularis* (Clerck), in both of which he observed the emission of the semen from the abdominal genital orifice of the male upon the threads of the net and its subsequent absorption by the palpal organs. He also notices a peculiar action in the male of *Epeira diadema*, which he regards as preparatory to the true copulation. Ausserer also notices the habits of those species which carry their eggs about with them either with or without a cocoon, and at the close of his paper furnishes a tabular synopsis of the various modes in which this is effected by the Tyrolese Spiders.

F. Terby publishes (Bull. Acad. Sci. Belg. xxiii. pp. 274–298) an account, illustrated with figures, of his observations upon the mode in which floating threads are projected by Spiders. He describes cases in which a single thread is emitted under the influence of a current of air, and finds that this is terminated at its free extremity by a set of branched filaments. In other instances the Spiders produce a partially double thread, one portion of which is then carried out in a loop by the current of air. These different processes

Tr[illegible]hown in the figures. The species observed were *Nuctobia callophyla*, equ[illegible]*ra diadema*, and *Tetragnatha extensa*. The author also experimented on th[illegible]*genaria civilis* and *domestica*, and on *Amaurobia atrox*, with negative results.

Kempelen (Verh. zool.-bot. Ges. in Wien, xvii. pp. 545–547) refers to the causes of the difficulty and errors in the determination of Spiders, indicating especially the states of preservation of the individuals described by authors, and the differences presented by young and old individuals, as mainly contributing to the confusion which still prevails in many genera. He illustrates his remarks by a description of the mature and immature *Drassus lapidicola*.

C. Giebel has published (Zeitschr. ges. Naturw. xxx. pp. 425–443) a notice of the species of this order collected by him in the summer of 1867 in Switzerland. He enumerates 26 species, several of which are described as new; and of the known species details are given as to variation, habits, &c.

Ausserer states (Verh. zool.-bot. Ges. in Wien, xvii. pp. 138–139) that the number of species of Araneida detected by him in the Tyrol (233) is greater than that recorded by Doleschal for the whole Austrian monarchy (205). He remarks upon the climatal and other physical conditions presented by that country as favouring this great number of species. He gives a list of the species hitherto detected in the Tyrol, with notes on the localities in which they are found. Four new species are described.

Canestrini has published (Comm. della Flora, Fauna, &c., October 1867) a list of the species of this order hitherto detected in the districts of Venice and Trent. Their number is 109.

Goureau (Insectes nuisibles à l'Homme &c., see "Insecta") notices various species of this order which are in some way troublesome or injurious to man or his possessions. He describes the general structure and habits of Spiders (*l. c.* pp. 241–245), and the characters and habits of the following species:—*Tegenaria domestica* (p. 245), *T. civilis* (p. 247), *Latrodectus malmignatus* (ibid.), *Lycosa tarentula* (p. 248), *Thomisus citreus* (p. 250) as a destroyer of Bees. Goureau also notices (p. 252) the Ichneumons and Fossorial Hymenoptera by which the Spiders are kept in check.

Mygalidæ.

Lincecum figures *Mygale hentzii* (Amer. Nat. i. p. 139).—The same author publishes a short account of the Tarantula of Texas (*Mygale hentzii*). Ibid. pp. 409–411.

Cteniza tigrina, L. Koch, Verh. zool.-bot. Ges. in Wien, xvii. p. 882, Syra.

Lycosidæ.

Ohlert (Aran. Preuss.) admits 9 genera for the Prussian species of this family, namely:—*Dolomedes*, *Ocyale*, *Potamia*, *Leimonia*, *Pardosa*, *Tarantula*, *Trochosa*, *Arctosa*, and *Zora*. The number of species described is 27.

Blackwall describes the male of his *Lycosa ingens*, and notices its dissemination in the Madeiran archipelago. Ann. & Mag. N. H. 3rd ser. xx. p. 203.

Dolomedes flaminius, sp. n., L. Koch, Verh. zool.-bot. Ges. in Wien, xvii. p. 197, and *D. albicomus*, sp. n., L. Koch, *l. c.* p. 199, Queensland.

Lycosa furcillata, sp. n., L. Koch, *l. c.* p. 201, and *L. excusor*, sp. n., L. Koch, *l. c.* p. 202, Queensland.—*Lycosa greenalliæ*, sp. n., Blackwall, Ann. & Mag. N. H. 3rd ser. xix. p. 387, India.

Trochosa rubrofasciata, sp. n., Ohlert, *l. c.* p. 141, Prussia.

Pardosa obscura, sp. n., Giebel, Zeitschr. ges. Naturw. xxx. p. 440, Switzerland.

Oxyopes candidus, sp. n., L. Koch, *l. c.* p. 866, Corfu.

Salticidæ.

Ohlert (Aran. Preuss.) describes 19 Prussian species of this family, referred to the 7 genera *Salticus*, *Calliethera*, *Heliophanus*, *Marpissa*, *Attus*, *Dendryphantes*, and *Euophrys*.

New species:—

Salticus biguttatus, Blackwall, Ann. & Mag. N. H. 3rd ser. xix. p. 388, and *S. candidus*, Blackw. *l. c.* p. 389, India.

Salticus diligens, Blackwall, Ann. & Mag. N. H. 3rd ser. xx. p. 204, *S. vafer*, Blackw. *l. c.* p. 205, *S. catus*, Blackw. *l. c.* p. 206, *S. sublestus* and *S. vigilans*, Blackw. *l. c.* p. 207, from Madeira.

Calliethera olivacea, L. Koch, Verh. zool.-bot. Ges. in Wien, xvii. p. 868, Syra, Tinos, Corfu.

Calliethera alpina, Giebel, Zeitschr. ges. Naturw. xxx. p. 441, Chamouni.

Heliophanus aurocinctus, Ohlert, *l. c.* p. 154, Prussia.

Euophrys radiata, Ohlert, *l. c.* p. 162, Prussia.

Heliophanus equester, L. Koch, *l. c.* p. 869, Tinos; *H. melinus*, L. Koch, *l. c.* p. 870, Syra, Tinos; *H. albo-signatus*, L. Koch, *l. c.* p. 871, Syra.

Attus. L. Koch (*l. c.*) describes the following new South-European species of this genus:—*A. capreolus*, p. 872, from Syra; *A. sulphureus*, p. 873, *A. leporinus*, p. 874, *A. teniatus*, p. 875, *A. armiger*, p. 876, *A. mitratus*, p. 877, and *A. regillus*, p. 879, from Tinos; *A. papilionaceus*, p. 878, and *A. lippiens*, p. 881, from Syra and Tinos.

The same author (*l. c.*) describes other new species of this genus:—*A. polyphemus*, p. 222, *A. nigrofemoratus*, p. 223, and *A. quadratarius*, p. 227, from Queensland; *A. piseulus*, p. 224, *A. foliatus*, p. 226, and *A. calcipalpis*, from Upolu.

Thomisidæ.

Of this family Ohlert (Aran. Preuss.) describes only 24 species as detected in the province of Prussia, but these are referred to 9 genera, namely:—*Thomisus*, *Xysticus*, *Artamus*, *Philodromus*, *Thanatus*, *Sparassus*, *Sphasus*, *Episinus*, and *Mithras*.

Sparassus ornatus (Walck.). The occurrence of this species in Devonshire is recorded by Blackwall (Ann. & Mag. N. H. 3rd ser. xx. p. 208).

New species:—

Philodromus aureolens, Ausserer, Verh. zool.-bot. Ges. in Wien, xvii. p. 165, taf. 7. fig. 6 (epigyne), Tyrol.

Philodromus ambiguus, Blackwall, Ann. & Mag. N. H. 3rd ser. xx. p. 208, = *P. pallidus* (Blackw. *olim* not Walck.).

Sparassus striatus, Blackwall, Ann. & Mag. N. H. 3rd ser. xix. p. 390, India.

Sparassus longipes, Giebel, Zeitschr. ges. Naturw. xxx. p. 438, Switzerland.

Ocypete procera, L. Koch, Verh. zool.-bot. Ges. in Wien, xvii. p. 205, and *O. vasta*, L. Koch, *l. c.* p. 207, Queensland.

Delena immanis, L. Koch, *l. c.* p. 208, Queensland.

Tr[illegible]sticus. Of this genus L. Koch (*l. c.*) describes the following new species from Queensland:—*X. dimidiatus*, p. 210; *X. pilula*, p. 212; *X. adustus*, p. 214; *X. bimaculatus*, p. 215; *X. nigropunctatus*, p. 217; *X. evanidus*, p. 218; and *X. pustulosus*, p. 220.

Xysticus bicolor, L. Koch, *l. c.* p. 867, Syra.

Drassidæ.

Argyroneta aquatica. F. Plateau has published (Bull. Acad. Sci. Belg. xxiii. pp. 96–125) some notes on the natural history and development of this species. The author describes the development of the ovum and of the embryo, and the growth and habits of the young after hatching. The mature *Argyroneta*, according to Plateau, forms two different subaquatic tents—one its domicile, not previously noticed, the other, which is already well known, for the reception of its eggs and young. The fabrication of these apartments is described, and they are figured in the accompanying plate. With regard to the power possessed by the Spider of carrying down air adhering to its body, Plateau ascribes it to the stability presented by the surface of contact of air with a liquid, provided the surface be sufficiently small, the coating of air carried by the *Argyroneta* on its abdomen being broken up into numerous small surfaces by the points of the bundles of hairs. The development of the embryo in the ovum is represented in figs. 3–6 of the plate. The paper is reported on by Poelman (*l. c.* pp. 71–73).

L. Koch has published the seventh part of his revision of the *Drassidæ*, which is entirely occupied by descriptions of species of *Clubiona*. The epigynes and male palpi of most of the species are figured. *C. amarantha* (Walck., Blackw., &c.) = *C. incomta* (C. Koch) = *C. pallidula* (Clerck).

Ohlert (Aran. Preuss.) arranges the Prussian species of this family in the genera *Argyroneta*, *Amaurobius*, *Drassus*, *Melanophora*, *Pythonissa*, *Clubiona*, *Cheiracanthium*, *Anyphæna*, *Macaria*, *Dysdera*, and *Segestria*, the last 2 genera forming his family *Dysderidæ*. The total number of species described by him is 39.

Kempelen (Verh. zool.-bot. Ges. in Wien, xvii. pp. 547–550) describes the mature and immature forms of *Drassus lapidicola*, and remarks upon their characters.

Segestria perfida. The occurrence of this species in Britain is confirmed by Blackwall (Ann. Mag. N. H. 3rd ser. xx. p. 212).

New genus and species:—

Thysa, g. n., Kempelen, *l. c.* p. 607. Allied to *Pythonissa*, but with only six eyes, those of the anterior row much larger than those of the third, and the latter larger than those of the middle row. Sp. *T. pythonissæformis*, sp. n., Kempelen, *l. c.* p. 607, taf. 14 B, Hungary.

Drassus delicatus, Blackwall, Ann. Mag. N. H. 3rd ser. xix. p. 391, India.

Drassus collingsiæ, Blackwall, Ann. Mag. N. H. 3rd. ser. xx. p. 209, Sark.

Drassus pallidipalpis, Bilimek, Verh. zool.-bot. Ges. in Wien, xvii. p. 906, Cave of Cacahuamilpa, Mexico.

Pholcus cordatus, Bilimek, *l. c.* p. 907, Cave of Cacahuamilpa.

Micaria præsignis, L. Koch, Verh. zool.-bot. Ges. in Wien, xvii. p. 8[illegible] Syra.

Macaria myrmecoides, Ohlert, *l. c.* p. 105, Prussia.

Melanophora insulana, L. Koch, *l. c.* p. 863, and *M. græca*, L. Koch, ibid., Tinos.

Liocranum ochraceum, L. Koch, *l. c.* p. 864, Corfu; *L. viride*, L. Koch, *l. c.* p. 865, Tinos.

Filistata distincta, Blackwall, Ann. Mag. N. H. 3rd ser. xx. p. 202, Jamaica.

Clubiona. The following new species are described by L. Koch (Arachn. Fam. der Drassiden):—*C. montana*, *l. c.* p. 308, pl. 12. fig. 197, Bohemia, South Russia, and Caucasus; *C. grisea*, *l. c.* p. 319, pl. 13. figs. 205–207, Tyrol, Dalmatia, and near Nuremberg; *C. cærulescens*, *l. c.* p. 331, pl. 13. figs. 213–215, Germany and Wallachia; *C. saxatilis*, *l. c.* p. 334, pl. 13. fig. 216, Tyrol; *C. similis*, *l. c.* p. 339, pl. 14. figs. 220, 221, Bavaria; *C. paradoxa*, *l. c.* p. 342, pl. 14. figs. 222, 223, Orsova; *C. frutetorum*, *l. c.* p. 344, pl. 14. figs. 224–226, near Nuremberg and Orsova, and in the Caucasus; *C. alpica*, *l. c.* p. 347, pl. 14. fig. 227, Tyrol; *C. subtilis*, *l. c.* p. 351, pl. 14. figs. 229–231, near Nuremberg.

Clubiona rubropunctata, Ohlert, *l. c.* p. 101, Prussia.

Pythonissa comata, Ohlert, *l. c.* p. 98, Prussia.

Ciniflonidæ.

Veleda pallens (Blackw.). Blackwall notices the habits of this species (Ann. Mag. N. H. 3rd ser. xx. p. 210).

Agelenidæ.

In this family Ohlert (Aran. Preuss.) admits the 4 genera *Tegeneria*, *Textrix*, *Agelena*, and *Hahnia*, including 8 Prussian species.

Tegenaria similis, sp. n., Giebel, Zeitschr. ges. Naturw. xxx. p. 436, Interlaken.

Amaurobius kochi, sp. n., Ausserer, Verh. zool.-bot. Ges. in Wien, xvii. p. 162, taf. 7. fig. 5 (♂ palp), Tyrol.

Amaurobius longinquus, sp. n., L. Koch, *l. c.* p. 196, Queensland.

Apostenus saxatilis, sp. n., Ausserer, *l. c.* p. 163, Tyrol.

Theridiidæ.

Ohlert (Aran. Preuss.) unites this group and the Linyphiidæ; of the true *Theridiidæ* he admits 6 genera, namely:—*Theridium*, *Eucharia*, *Asagena*, *Phrurolithus*, *Dictyna*, and *Ero*. The number of species is 21.

Artema convexa (Blackw.). Blackwall remarks upon the characters and geographical range of this species, which occurs in India and Equatorial Africa, and at Pernambuco. Ann. Mag. N. H. 3rd ser. xix. p. 394.

Blackwall (Ann. Mag. N. H. 3rd ser. xx. p. 210) records the occurrence in Britain of *Theridion triste* (Hahn). *T. triste* (Walck.) probably = *Phrurolithus lunatus* (Koch). The same author (*l. c.* p. 211) notices the characters of *T. grossum* (Walck.), and especially those of the male and immature female. Blackwall also notices *Latrodectus crebus*, which he regards as identical with *L. malmignatus*, and mentions the failure of his attempts to induce them to bite him (*l. c.* p. 212).

Trithena, g. n., E. Simon, Rev. et Mag. de Zool. 1867, p. 22. Eyes 8, equal, in a semicircle on a frontal tubercle, separated by a transverse fold from the margin; cephalothorax very short, much narrowed in front, triangular; abdomen with a hard skin, broad, triangular, with a long vertical cylindrical spine at each angle. Sp. *T. inuncans*, sp. n., Simon, *l. c.* p. 23, Brazil.

New species :—

Theridium piligerum, Frauenfeld, Verh. zool.-bot. Ges. in Wien, xvii. p. 462, on board ship near the Nicobars.—*Theridium margaritatum*, L. Koch, Verh. zool.-bot. Ges. in Wien, xvii. p. 861, Tinos.—*Theridium decoratum*, L. Koch, *l. c.* p. 188, *T. cæliferum*, L. Koch, *l. c.* p. 189, *T. pyramidale*, L. Koch, *l. c.* p. 190, and *T. humile*, L. Koch, *l. c.* p. 191, Queensland.

Eucharia zonata, Ohlert, Aran. Preuss. p. 40, Prussia.

Pholcus litoralis, L. Koch, *l. c.* p. 193, Queensland.

Pholcus lyoni, Blackwall, Ann. Mag. N. H. 3rd ser. xix. p. 392, India.

Enyo annulipes, L. Koch, *l. c.* p. 194, Queensland.

Ero albostriata, L. Koch, *l. c.* p. 187, Queensland.

Linyphiidæ.

The genera admitted by Ohlert (Aran. Preuss.) in this family, which he unites with the *Theridiidæ*, are five in number, namely, *Linyphia*, *Bolyphantes*, *Pachygnatha*, *Erigone*, and *Micryphantes*; and the total number of species referred to these genera is 45.

Linyphia keyserlingi, sp. n., Ausserer, Verh. zool.-bot. Ges. in Wien, xvii. p. 160, taf. 7. figs. 1–4, Tyrol.

Linyphia leprosa, sp. n., Ohlert, Aran. Preuss. p. 47, and *L. albomaculata*, Ohl. *l. c.* p. 81, Prussia.

Micryphantes conifer, Ohlert, *l. c.* p. 63, *M. gibbus*, Ohl. *l. c.* p. 65, *M. stylifer*, Ohl. *l. c.* p. 66, *M. frontalis*, Ohl. ibid., *M. capito* (Först.), Ohl. *l. c.* p. 67, *M. cristatopalpus*, Ohl. *l. c.* p. 72, *M. grandimanus*, Ohl. *l. c.* p. 77, and *M. ruficephalus*, Ohl. *l. c.* p. 79, Prussia.

Epeïridæ.

Ohlert (Aran. Preuss.) admits the following 8 genera in this family:—*Epeïra*, *Singa*, *Miranda*, *Atea*, *Zilla*, *Zygia*, *Meta*, and *Tetragnatha*. The total number of species described is only 23.

Aranea lobata (Pallas). Thorell (Öfvers. Kongl. Vet.-Akad. Förh. 1867, pp. 591–596) discusses the synonymy of this species, which, from the citation by Pallas of a species from the Cape of Good Hope figured by Petiver, has been supposed to be extra-European. In his 'Naturg. merkw. Thiere, 9te Sammlung,' published in 1777, Pallas states that his *A. lobata* inhabits the south of Russia; and Thorell now identifies the species with *A. sericea* (Oliv.) belonging to the genus *Argiope*. The synonymy of *Argiope lobata* (Pall.) is given as follows by Thorell: =*sericea* (Oliv. &c.)=*margaritacea* (Risso)=*argentea* (Gmel.)=*dentata* (Risso, Walck.)=*pralautus* (Koch).

L. Koch (Verh. zool.-bot. Ges. in Wien, xvii. p. 185) describes the mature female of *Tetragnatha granulata* (Walck.).

New species :—

Gasteracantha turrigera, L. Koch, *l. c.* p. 173, Queensland.

Cyrtogaster excavata, L. Koch, *l. c.* p. 175, Queensland.

Epeïra brisbanæ, L. Koch, *l. c.* p. 176, Queensland; *E. rhomboides*, L. Koch, *l. c.* p. 177, Upolu; *E. producta*, L. Koch, *l. c.* p. 178, Queensland; *E. litoralis*, L. Koch, *l. c.* p. 180, Upolu.

Epeïra flava, Giebel, Zeitschr. ges. Naturw. xxx. p. 429, Halu and Interlaken.

Zilla alpina, Giebel, *l. c.* p. 434, Switzerland.

Argyopes plana, L. Koch, *l. c.* p. 181, Queensland.

Argyopes impudicus, L. Koch, *l. c.* p. 857, Tinos; *E. impedita*, L. Koch, *l. c.* p. 859, Corfu.

Singa semiatra, L. Koch, *l. c.* p. 860, Corfu.

Nephila venosa, L. Koch, *l. c.* p. 183, Queensland.

Nephila sexpunctata, Giebel, Zeitschr. ges. Naturw. xxx. p. 325, Mendoza (South Brazil).

Tetragnatha bituberculata, L. Koch, *l. c.* p. 184, Queensland.

Deinopis cylindraceus (C. Koch), L. Koch, *l. c.* p. 230, Queensland.

Arachnoura melanura, Simon, Rev. et Mag. de Zool. 1867, p. 17, origin not stated.

Micrathena bufonina, Simon, *l. c.* p. 20, Gilolo.

PEDIPALPI.

Phrynidæ.

Phrynus australianus, sp. n., L. Koch, Verh. zool.-bot. Ges. in Wien, xvii. p. 231, Upolu.—*Phrynus mexicanus*, sp. n., Bilimek, Verh. zool.-bot. Ges. in Wien, xvii. p. 905, cave of Cacahuamilpa, Mexico.

Scorpionidæ.

Goureau (Insectes nuisibles à l'Homme &c. pp. 238–241, see "Insecta") describes the general habits of the Scorpions, and describes the 2 species found in the south of France, *Scorpio occitanus* and *S. europæus*.

Julius Milde publishes a note on the two species of Scorpion observed by him at Meran. Jahresber. schles. ges. vaterl. Cultur, xliv. p. 58. (See 'Record,' 1865, p. 373.)

R. Hill (of Jamaica) publishes (Ann. Lyc. Nat. Hist. New York, viii. pp. 387–393) some notes on the natural history of the Scorpion, which are almost entirely compiled from European writers. They are accompanied by some remarks by H. Krebs (of St. Thomas's, W. I.).

G. Lincecum (American Naturalist, i. pp. 203–205) gives a brief account of the habits of the Scorpion inhabiting Texas, illustrated by a woodcut figure. He says the inconvenience produced by the sting of the Texan Scorpions is not so great as by that of the Honey Bee; they are greedily devoured by chickens and other birds.

Guyon (Comptes Rendus, lxiv. pp. 1001–1003) calls attention to the occurrence of erection of the penis in the human subject consequent on stinging by Scorpions.

Opisthophthalmus calvus, sp. n., L. Koch, Verh. zool.-bot. Ges. in Wien, xvii. p. 233, South Africa.

Telegonus politus, sp. n., L. Koch, *l. c.* p. 234, and *T. lunatus*, sp. n., L. Koch, *l. c.* p. 235, South America.

Ischnurus caudicula, sp. n., L. Koch, *l. c.* p. 237, Brisbane.

Lychas melanodactylus, sp. n., L. Koch, *l. c.* p. 239, Brisbane.

ADELARTHROSOMATA.

PHALANGIIDÆ.

AUSSERER (Verh. zool.-bot. Ges. in Wien, xvii. pp. 158, 159) gives a list of the species of this group observed by him in the Tyrol; it includes 26 species of true *Phalangidæ* and 3 *Trogulidæ*. Of the former 2 and of the latter 1 are described as new.

C. GIEBEL (Zeitschr. ges. Naturw. xxx. pp. 442–443) enumerates 6 species of this family detected by him in Switzerland in the summer of 1867 (*Opilio* 3, *Cerastoma* 2, and *Leiobunum* 1).

New species:—

Trogulus perforaticeps, Ausserer, *l. c.* p. 169, taf. 8. fig. 3, Tyrol.

Trogulus opilionoides, L. Koch, Verh. zool.-bot. Ges. in Wien, xvii. p. 883, Corfu.

Platylophus strigosus, L. Koch, *l. c.* p. 884, Montenegro.

Acantholophus annulipes, L. Koch, *l. c.* p. 885, Montenegro; *A. coronatus*, L. Koch, *l. c.* p. 886, Syra.

Acantholophus helleri, Ausserer, *l. c.* p. 167, taf. 8. fig. 1, Tyrol.

Opilio. L. Koch describes the following new South-European species of this genus:—*O. molluscus*, *l. c.* p. 887, Montenegro; *O. lævigatus* and *præfectus*, *l. c.* p. 888, *O. instratus*, *l. c.* p. 891, and *O. vorax*, *l. c.* p. 892, from Syra; *O. pristes*, *l. c.* p. 889, Corfu.

Nemastoma globuliferum, L. Koch, *l. c.* p. 893, Syra.

Nemastoma dentipalpis, Ausserer, *l. c.* p. 168, taf. 8. fig. 2, Tyrol.

CHELIFERIDÆ.

F. LÖW (Verh. zool.-bot. Ges. in Wien, xvii. p. 746) mentions another example of the adherence of *Chelifer* to the legs of a small fly.

Obisium longicolle, sp. n., Frauenfeld, Verh. zool.-bot. Ges. in Wien, xvii. p. 461, on board ship off the Nicobars.

ACARINA.

FERMOUZE and C. ROBIN, in the thesis published by the former on *Cantharis vesicatoria*, notice 5 species of this group which feed upon and damage the stores of that Beetle kept in shops and warehouses. These are *Tyroglyphus longior* (Serv.) and a new species, *Glyciphagus cursor* (Serv.) and *spinipes* (Koch), and *Cheyletus eruditus* (Lat.). These are figured on 4 plates; but as the Recorder has not seen this work, he cannot give the references.

GOUREAU (Insectes nuisibles à l'Homme &c., see "INSECTA") notices various forms of this order as injurious in various ways to man and the domestic animals. He describes the characters and habits of the Ticks (*Ixodes ricinus*, *reticulatus*, *plumbeus*, *reduvius*, *megathyreus*, and *autumnalis*, *l. c.* pp. 220–223), of *Argas reflexus*, the parasite of the pigeon (*l. c.* p. 224), of the Itch-mite, *Sarcoptes scabiei* (*l. c.* pp. 225–227), of a mixed set of "domestic mites" (*l. c.* pp. 227–233), including *Tyroglyphus domesticus*, *farinæ*, *lactis*, and *dysenteriæ*, and *Dermanyssus avium*, *gallinæ*, and *gallopavonis*, of *Gamasus coleoptratorum*

(*l. c.* p. 233), the title of which to be regarded as an injurious insect is not very clear, and of various species of *Trombidium*, especially *T. telarium* and *T. phalangii* (*l. c.* pp. 234–237).

The occurrence of *Ixodes sulcatus* (Koch) on *Sitta europæa* is recorded by Rey (Zeitschr. ges. Naturw. xxix. p. 292).

Ixodes. The following new species from Queensland are described by L. Koch (Verh. zool.-bot. Ges. in Wien, xvii.):—*I. decorosus*, p. 241, on *Hydrosaurus giganteus* (Gray); *I. moreliæ*, ibid., on *Morelia argus*; and *I. varani*, p. 242, on *Hydrosaurus giganteus*.

Lucas mentions his having received specimens of his *Ixodes gervaisii*, of which the ♂ had their rostrum inserted into the abdomen of the ♀, so as to draw their nourishment from the latter. The type specimen of *I. flavomaculata*, described by Lucas in 1846, was a ♂. Bull. Soc. Ent. Fr. 1867, p. lxxii.

Lucas notices a species of this genus found on a mare suffering from a pustular eruption. The *Ixodes* fed upon the fluid of the pustules; and Lucas proposes for it the name of *I. pustularum*. Ibid. 1866, p. lvii.

Tyroglyphus feculæ. Guérin-Méneville records the occurrence of a species to which he gives this name among some potatoes stored at Vincennes. Bull. Soc. Ent. Fr. 1866, pp. lxiii, lxiv.

A. Müller records the occurrence of *Trombidium lapidum* in great abundance near Penge, and notices the presence of 2 examples of *Acarus phalangii* (Dej.) on a specimen of *Lagria hirta*. Ent. M. Mag. iv. p. 71.

F. Löw (Verh. zool.-bot. Ges. in Wien, xvii. p. 745) remarks upon the occurrence of mites parasitically attached to Insects. He has found the young of *Trombidium* adhering to *Tæniopteryx trifasciata* (Pict.), which is the more remarkable as the preparatory states of this insect are passed in the water. He has also met with *Gamasidæ* attached to *Hylesinus fraxini* (Fab.), to species of *Dytiscus*, and along the veins of the fore wings in *Libellulæ*.

Lucas notices the occurrence of minute octopod specimens of a *Gamasus* upon *Hylesinus fraxini*. Bull. Soc. Ent. Fr. 1867, p. lxviii.

T. J. Bold records the occurrence of Acarina on the abdomen of *Corixa* beneath the wings. Ent. M. Mag. iv. p. 213.

Moriggia describes (Atti Accad. Sci. Torino, i. pp. 449–463) and figures a singular horny excrescence of great length growing from the back of the hand of a lady, and containing in its cavities great quantities of *Acarus domesticus*. The excrescence was nearly eight inches in length, tapering upwards from a wide base, and curved towards the wrist.

J. Lemaire (Comptes Rendus, lxv. pp. 215, 216) communicates the particulars of a case in which a Mexican parasite, the *Tlalsahuate*, apparently a species of mite, made its appearance in France.

Smaridia extranea, sp. n., L. Koch, Verh. zool.-bot. Ges. in Wien, xvii. p. 242, Queensland.

Gamasus flavolimbatus, sp. n., L. Koch, *l. c.* p. 243, Queensland.

Tyroglyphus siculus, sp. n., Fermouze & Robin, Cantharide officinale, p. , pl. . fig. .

Rhipicephalus carinatus. Frauenfeld, Verh. zoot.-bot. Ges. in Wien, xvii. p. 462, on board ship in the Chinese sea; *R. rubicundus*, Frauenf. ibid., on board ship in the Sunda sea.

MYRIOPODA

BY

W. S. DALLAS, F.L.S., C.M.Z.S., &c.

KOCH, L. (See "ARACHNIDA.")

WOOD, H. C. Descriptions of New Species of Texan Myriapoda. Proc. Acad. Nat. Sci. Philad. 1867, pp. 42–44.

——. Notes on a Collection of California Myriapoda, with the descriptions of new Eastern Species. Ibid. pp. 127–130.

In this paper the author remarks that several species formerly described by him as from Georgia are probably strictly Californian, he having in all probability been led into error by the mingling in one bottle of Dr. Leconte's Georgian and Californian collections of Myriopods.

VON MARTENS (Preuss. Exped. nach Ost-Asien, Zool. p. 12) notices the forms of Myriopoda observed by him in Madeira. Species of *Julus* were particularly abundant, especially in the lower region. Forms allied to *Lithobius*, and *Geophilus*, were also met with; *Cermatia coleoptrata* lives in the houses. At Rio Janeiro (*l. c.* p. 36) *Julus* and *Polydesmus* are abundant as in Europe, but associated with the great tropical *Scolopendræ*. The bite of the latter in Japan (*l. c.* p. 130) is painful, but produces no other effects. Other Japanese Myriopoda noticed by Von Martens are small pale yellow species of *Julus*, and *Polydesmi* spotted with orange (*osamusi* of the Japanese Encyclopædia). The Japanese name of the *Scolopendræ* is "*mukade*."

CHILOPODA.

The habits of various species of this order are noticed by Goureau (Insectes nuisibles à l'Homme &c. pp. 215–219, see "INSECTA"). He mentions *Scolopendra morsitans* and *Lithobius forcipatus* as representatives of the more powerful forms of the group, which in warm climates are capable of producing injurious effects by their bite, and also *Geophilus electricus* as having caused mischief by passing through the nostrils and taking up its abode in the nasal fossæ.

CERMATIIDÆ.

Cermatia linceci! sp. n., H. C. Wood, Proc. Acad. Nat. Sci. Phil. 1867, p. 42, Texas.

LITHOBIIDÆ.

Lithobius bilabiatus, sp. n., H. C. Wood, *l. c.* p. 130, Illinois.—*Lithobius pubescens*,

sp. n., L. Koch, Verh. zool.-bot. Ges. in Wien, xvii. p. 898, *L. litoralis*, sp. n., L. Koch, *l. c.* p. 899, and *L. nigripalpis*, sp. n., L. Koch, ibid., from Tinos.

Henia minor, sp. n., L. Koch, *l. c.* p. 897, Tinos.

Scolopendridæ.

Cormocephalus brevispinatus, sp. n., L. Koch, *l. c.* p. 248, Queensland.

Geophilidæ.

Geophilus lævis, *Bothropolys xanti*, *Scolopocryptops spinicauda*, and *Strigamia lævipes* (Wood) are from California instead of Georgia, according to Wood, Proc. Acad. Nat. Sci. Phil. 1867, p. 128.

Strigamia gracilis, sp. n., H. C. Wood, *l. c.* p. 128, and *S. inermis*, H. C. Wood, *l. c.* p. 129, California.

Mecistocephalus quadratus, sp. n., H. C. Wood, Proc. Acad. Nat. Sci. Phil. 1867, p. 128, Coast Mountains, California.

Cryptops asperipes, sp. n., H. C. Wood, *l. c.* p. 129, California.

CHILOGNATHA.

Polydesmidæ.

Polydesmus haydenianus and *Spirobolus uncigerus* (Wood) are from California instead of Georgia: see Wood, *l. c.* p. 129.

Polydesmus dissectus, sp. n., H. C. Wood, *l. c.* p. 129, California.

Polydesmus impurus, sp. n., H. C. Wood, *l. c.* p. 43, Texas.

Strongylosoma asperum, L. Koch, Verh. zool.-bot. Gesellsch. in Wien, xvii. p. 245, *S. transverse-tæniatum*, L. Koch, *l. c.* p. 246, *S. rubripes*, L. Koch, *l. c.* p. 247, and *S. dubium*, L. Koch, ibid., are new species from Queensland.

Julidæ.

Von Martens (Preuss. Exped. nach Ost-Asien, Zool. p. 12) notices especially two species of *Julus* as common in Madeira,—one honey-yellow, with a dark dorsal streak, the other black, with a series of pale points.

Julus cæsius, sp. n., H. C. Wood, Proc. Acad. Nat. Sci. Phil. 1867, p. 44, Texas; *J. diversifrons*, sp. n., H. C. Wood, ibid., Texas and Illinois.

Spirostreptus impresso-punctatus, sp. n., L. Koch, Verh. zool.-bot. Ges. in Wien, xvii. p. 243, and *S. maritimus*, sp. n., L. Koch, *l. c.* p. 244, Queensland.

Lysiopetalidæ.

Lysiopetalum. L. Koch (Verh. zool.-bot. Ges. in Wien, xvii.) describes the following new South-European species of this genus:—*L. insculptum*, p. 893, Montenegro and Dalmatia; *L. scabratum*, p. 894, *L. ictericum*, p. 895, *L. erberi*, p. 896, and *L. corcyræum*, p. 897, from Corfu.

INSECTA

BY

W. S. Dallas, F.L.S., C.M.Z.S., M.E.S.

A. *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 iv. livr. 2–6: 1867.

The first two livraisons (published in the year 1867) were reported on almost entirely in the 'Record' for 1866. Allard's monograph of the European *Alticides* is completed in livr. 4 of tome iv.; but the editor there indicates that this memoir, with the monograph of the *Galerucides* s. str. by Joannis, will constitute tome iii. of the 'Abeille,' for which he gives a titlepage. Livraisons 5 & 6 consist entirely of analyses of works published elsewhere, especially in Russia, with reprints of the descriptions of new species. The journals here laid under contribution are the 'Entomologische Zeitung' of Stettin, 1863–1865, the 'Bull. Soc. Nat. de Moscou,' 1862–1865, and the 'Horæ Soc. Ent. Rossicæ,' 1863–1865.

Ratzeburg, I. T. C. Die Waldverderbniss, oder dauernder Schade, welcher durch Insektenfrass, &c., an lebenden Waldbäumen entsteht. Band i. Berlin, 1866, 4to, pp. x & 298; 34 plates.

In this great work, which, as far as the Insecta are concerned, stands to the 'Forstinsekten' much in the same relation as the ledger of a merchant to his journal, Ratzeburg treats of the injury done to forest-trees by the attacks of animals, the subject being arranged under the heads of the different species of trees. The first volume, published in 1866, is devoted to the Coniferæ, the species referred to being *Pinus sylvestris* and *P. abies*. In the introductory chapter a general view is taken of the subject, chiefly as a guide to the forester in watching for the first appearance of mischief.

The species enumerated as inhabiting *Pinus sylvestris* are as follows:—

I. In or on the leaves, flowers, or fruit :—

Tenthredo cingulata, campestris, erythrocephala, pallida*, pini*, pratensis*, rufa, socia*; *Bombyx dispar, monacha*, pini*, pinivora*; *Geometra lituraria, piniaria**; *Noctua piniperda*, quadra*; *Sphinx pinastri*; *Gryllus verrucivorus* &c.; *Chrysomela pinicola*; *Curculio atomarius, coryli, incanus, indigena, mollis, notatus*; *Melolontha fullo, hippocastani, solstitialis, vulgaris*; *Tipula brachyptera, pini.*

II. In or on buds, shoots, or branches :—

*Tinea sylvestrella**; *Tortrix buoliana*, dorsana, duplana, margarotana, pinivorana, resinana, turionana, viburnana?*; *Anobium molle*; *Bostrichus bidens, laricis, pityographus*; *Buprestis* 4-*punctata*; *Curculio carbonarius, notatus, phlegmaticus, pini*, violaceus*; *Hylesinus angustatus, ater, minimus, minor, opacus, piniperda**.

III. In or on the stems :—

Sirex juvencus, spectrum (?); *Bombyx cossus*; *Bostrichus laricis, lichtensteinii, lineatus, stenographus, typographus*; *Curculio piniphilus, notatus*; *Hylesinus minor, palliatus, piniperda.*

IV. In or on the roots :—

Noctua valligera, segetum (?); *Gryllus gryllotalpa, Curculio notatus, pini**; *Hylesinus ater, piniperda**; *Melolontha solstitialis, fullo, vulgaris.*

The list of the enemies of *Pinus abies* is equally formidable. It includes :—

I. In or on leaves, flowers, or fruits :—

Tenthredo abietum, hypotrophica*, &c.; *Bombyx antiqua*, dispar, monacha**; *Geometra piniaria*; *Noctua piniperda, pisi**; *Tinea abietella**; *Tortrix hercyniana*, histrionana*, nanana*, &c., *ratzeburgiana, hartigiana, strobilana*; *Anobium abietinum, abietis*; *Curculio atomarius, mollis*; *Melolontha hippocastani, vulgaris.*

II. In or on buds, shoots, or twigs :—

Tinea abietella, bergiella, judeichella; *Tortrix dorsana**; *Chermes abietis**; *Coccus racemosus*; *Bostrichus abietis, chalcographus*; *Buprestis* 4-*punctata*; *Curculio atomarius, pini, violaceus*; *Hylesinus polygraphus.*

III. In or on the stems :—

Sirex gigas, juvencus, spectrum; *Anobium emarginatum, molle*; *Bostrichus autographus, laricis, lineatus, pityographus, pusillus, typographus*, &c.; *Cerambyx luridus*, &c.; *Curculio gyllenhalii, hercyniæ*; *Hylesinus decumanus, micans, palliatus, polygraphus*, &c.

IV. In or on the roots :—

Gryllus gryllotalpa; *Noctua segetum*, valligera*; *Curculio ater, ovatus, pini*; *Elater marginatus*; *Hylesinus cunicularius*; *Melolontha hippocastani, vulgaris.*

In the above lists the species which receive detailed notice are marked with an asterisk. The plates and numerous woodcuts printed in the text show the effects produced upon the growth of the trees by the attacks of these insects, and of the other enemies of the forests, by means of figures of entire trees in the natural and distorted state, sections of wood, diseased portions, &c. The last plate is a plan of the Glücksburg forest-district, showing the extent and degree of the so-called "Raupenfrass," or the ravages of the *Bombyx*-larvæ.

B. *Separate Works.*

Figuier, L. Les Insectes. 8vo, pp. 616. Paris, 1867.

This appears to be a well-executed popular treatise on insects, and is illustrated by an immense number of woodcuts, generally of very good quality. An English translation of it has lately appeared, under the title of "The Insect World."

Girard, Maurice. Les Métamorphoses des Insectes. Paris, 1867.

This little work, which the Recorder has not seen, contains an account of the transformations of insects and a description of many other points in general entomology. It has been exceedingly popular in France.

Goureau, C. Les Insectes nuisibles à l'Homme, aux animaux et à l'économie domestiques. Paris, 1866, pp. 258.

In this little volume, which appears to be a publication of the Société des Sciences de l'Yonne, Goureau gives a semipopular account of the various insects which are to be regarded as injurious to man himself, to domestic animals, and to manufactured articles; whether of animal or vegetable origin. The author justly remarks that these insects have received less attention than those which affect our cultivated plants; but this is perfectly natural, because, as a general rule, however troublesome they may be, the injury which they do us is of far less importance.

Martens, E. von. Die preussische Expedition nach Ost-Asien. Zoologische Abtheilung, Band i. Berlin, 1865, pp. 192.

This portion of the zoology of the Prussian scientific expedition to Eastern Asia contains general remarks on the zoology of the countries visited, and is of considerable interest as regards the geographical distribution of animals. The insects occupy a comparatively small portion of its contents.

Möller, L. Die Abhängigkeit der Insecten von ihrer Umgebung. Leipzig, 1867, pp. vi & 107.

In this little work (an inaugural dissertation read before the philosophical Faculty of the University of Leipzig) the author brings together a series of valuable observations on the dependence of insects upon surrounding conditions. He indicates the influence of climate upon the distribution of insects, the effects of the nature of the soil upon their well-being (both directly as furnishing more or less favourable places of residence, or breeding-localities, and indirectly as favouring or limiting the growth of certain plants in particular places), the relations between insects and plants, and between them and other animals or animal products, and, finally, the effects of human traffic or industry in modifying the results of natural conditions. In a concluding section Möller briefly sketches the part played by insects in the

œconomy of nature. His observations have been chiefly made in the district of Mühlhausen, of which a geognostic map is appended to this little volume. There does not appear to be any very striking novelty in the author's views; but in the present state of science the subject which he has taken up is one of great importance, and he has done good service by bringing together so much valuable information.

C. *Papers published in Journals &c.*

a. *Descriptive and Zoological.*

Anonymous (N.). Entomologisches von der Pariser Welt-Ausstellung. Horæ Soc. Entom. Rossicæ, tome v. pp. 23–28.
Contains a notice of a few matters interesting to entomologists in the Paris Exhibition of 1867.

Bail, —. Ueber Epidemieen der Insecten durch Pilze. Stettiner entom. Zeitung, 1867, pp. 455–462.
On epidemics of Insects produced by fungi.

Beal, W. J. Agency of Insects in fertilizing Plants. American Naturalist, vol. i. pp. 254–260 & 403–408.
A short account of the observations of Darwin and others upon this subject.

Becker, A. Reise in die Kirgisensteppe, nach Astrachan und an das caspische Meer. Bull. Soc. Nat. de Moscou, xxxix. pt. 2. pp. 163–207.
The contents of this paper are chiefly botanical; but it includes some lists of insects at pp. 202–207.

——. Noch einige Mittheilungen über Astrachaner und Sareptaër Pflanzen und Insekten. Ibid. xl. pt. 1. pp. 104–116.

Bilimek, Dominik. Fauna der Grotte Cacahuamilpa in Mexiko. Verhandl. zool.-bot. Ges. in Wien, Band xvii. pp. 901–908.

Dohrn, Anton. *Eugereon boeckingi* und die Genealogie der Arthropoden. Stettiner entom. Zeitung, 1867, pp. 145–153, pl. 1.
In this paper Dohrn indicates the general characters of *Eugereon boeckingi*, a remarkable fossil insect from the Upper Carboniferous formation. It seems to present characters intermediate between the Pseudo-Neuroptera and the Rhynchota; and from its consideration the author takes occasion to remark upon Häckel's views as to the genealogy of the Arthropoda. The paper is throughout in favour of the Darwinian theory.

Forel, A. Notes sur quelques Insectes nuisibles au Colza dans le Canton de Vaud. Bull. Soc. Vaudoise des Sci. Nat. vol. ix. pp. 72–84: March 1866.

Frauenfeld, G. von. Zoologische Miscellen. XI. Verhandl. zool.-bot. Gesellsch. Wien, xvii. pp. 425–502, pl. 12.

This contains an elaborate memoir on the occurrence of Insects at sea, a notice of the fauna and flora of New Caledonia, with some entomological notes, and descriptions of some new Diptera.

——. Zoologische Miscellen. XII. Ibid. pp. 775–784.

Notices of the larvæ of three species of Coleoptera, a description of a new *Hormomyia*, and a note upon some insects of various orders which appeared in unusual abundance in 1867.

——. Zoologische Miscellen. XIII. Ibid. pp. 793–804.

Notices and descriptions of species of *Aleurodes* and *Thrips*, and of some *Psyllidæ*.

Fritsch, Gustav. Das Insektenleben Süd-Afrika's. Eine biologische Skizze. Berliner entom. Zeitschrift, 1867, pp. 247–277.

Girard, Maurice. Discours prononcé le 9 Janvier en prenant les fonctions de Président de la Société Entomologique de France pour l'année 1867, suivi de Notes et Renseignements, et de la Table des Travaux d'Entomologie appliquée publiés par les Membres de cette Société depuis sa fondation. Annales Soc. Ent. Fr. 4e sér. tome vii. pp. 1–32.

In this address Girard directs attention to the importance of œconomic entomology, and gives a list of all the works relating to this subject published by members of the French Entomological Society, both in its 'Annales' and elsewhere.

Kaltenbach, J. H. Les Insectes Phytophages d'Allemagne, leurs mœurs et leur propagation. Archives Cosmologiques, 1867, pp. 65–80, 131–144, 163–176, 199–208, & 261–281.

This is a translation of the first portion of Kaltenbach's valuable memoir (noticed in 'Record,' 1864, p. 331). It extends only as far as the genus *Anthyllis* in the alphabetically arranged list of plants.

Kawall, J. H. Miscellanea Entomologica. Stettiner entom. Zeitung, 1867, pp. 117–124.

Contains notes on the habits of Insects of various orders (Coleoptera, Lepidoptera, Hymenoptera, Diptera, and Rhynchota).

Kiesenwetter, H. von. Entomologische Beiträge zur Beurtheilung der Darwin'schen Lehre von der Entstehung der Arten. Berliner ent. Zeitschrift, 1867, pp. 327–349.

This is a most interesting argument in favour of the Darwinian hypothesis from an entomological point of view.

Künstler, G. A. Zusammenstellung und Erörterungen über die im Laufe der Jahre 1866 und 1867 eingegangenen Berichte über Land- und Forstwirthschaftsschäden durch

Insecten. Verhandl. zool.-bot. Gesellsch. in Wien, Band xvii. pp. 913–962.

In this memoir Künstler gives an elaborate analysis of the contents of 62 reports on insects injurious to agricultural productions and forest-trees in the Austrian dominions sent in during the years 1866 and 1867. The principal details will be referred to in their proper places.

Laboulbène, A. Sur la Préparation des Insectes de la taille la plus exiguë, et sur la conservation des Collections Entomologiques. Annales Soc. Ent. Fr. 4e série, tome vi. pp. 581–596, pl. 8.

This paper contains some useful hints on the management and preservation of Entomological Collections, and especially on the preparation of minute insects. Some of the processes are illustrated with figures (pl. 8. figs. 10–24).

Löw, Franz. Zoologische Notizen. Zweite serie. Verhandl. zool.-bot. Gesellsch. in Wien, Band xvii. pp. 745–752.

Contains notices of species of *Aleurodes*, *Heliothrips*, *Lyda*, *Cicindela*, and *Meloë*, and notes on the inhabitants of Swallows' nests, and on winter Insects.

Packard, A. S. On certain Entomological Speculations. A Review. Proc. Ent. Soc. Philad. vi. pp. 209–218: 1867.

In opposition to a paper by B. D. Walsh bearing the same title (see 'Record,' 1864, p. 332).

——. Insects and their Allies. Amer. Naturalist, i. pp. 73–84.

A popular account of the general structure and development of insects contrasted with other groups of Arthropoda.

Perty, M. Einige Insekten-Missbildungen. Mittheil. naturf. Gesellsch. in Bern, 1867, pp. 298–309, with a plate.

Contains notices of monstrosities of various insects, chiefly Beetles; several are figured in the accompanying plate.

Spruce, R. Notes on some Insect- and other Migrations observed in Equatorial America. Journ. Linn. Soc. ix. pp. 346–367.

This paper contains some general remarks on the physical characters and vegetation of the Amazon valley, with observations on some migrations of Insects observed by the author. These observations relate almost exclusively to Butterflies and Ants.

Villa, Antonio. Riflessioni sugli Insetti, e nuove osservazioni sui medesimi durante l'eclisse del 6 Marzo 1867. Atti Soc. Ital. Sci. Nat. vol. x. pp. 155–162.

Notice of the behaviour of Insects of various kinds during the solar eclipse of 6th March 1867.

Wallace, A. R. Mimicry and other protective Resemblances

among animals. Westminster Review, New Series, vol. xxxii. pp. 1–43.

In this admirable memoir the author brings together an immense number of facts demonstrating the occurrence of mimetic resemblances in animals of various groups either to each other or to other natural objects. The entomological portion of this evidence is by far the strongest and most interesting; but, from the brevity with which it is put forward, no satisfactory analysis of the author's statements is possible here. In most cases the author regards the resemblances described by him as serving for the protection of the Insects; and the whole subject is, of course, treated from a Darwinian point of view.

Walsh, B. D. On the Insects, Coleopterous, Hymenopterous, and Dipterous, inhabiting the Galls of certain species of Willow. Proc. Ent. Soc. Philad. vol. vi. pp. 223–288: 1866–1867.

This paper contains descriptions of numerous new species, and remarks upon various points in the structure of Insects.

b. *Anatomical and Physiological.*

Dujardin, F. Mémoire sur les yeux simples ou stemmates des Animaux articulés. Annales Sci. Nat. 5me sér. tome vii. pp. 104–112.

Landois, H. Die Ton- und Stimmapparate der Insecten in anatomisch-physiologischer und akustischer Beziehung. Zeitschrift für wiss. Zoologie, Band xvii. pp. 105–184, pls. 10, 11.

An elaborate memoir on the sounds emitted by Insects of various orders, and on the means by which they are produced. Brief notices of the species referred to will be given under the separate orders.

Landois, H., & Thelen, W. Der Tracheenverschluss bei den Insecten. Ibid. pp. 187–214, pl. 12.

A description of the means by which the tracheæ of Insects are closed. The apparatus consists in general, according to the authors, of the following parts:—A chitinous bow occupying and extending one side of the trachea, a chitinous band occupying the other side, and one or more cones or levers appended to the latter, and acted upon by a muscle in such a way as to press the band towards the bow. The authors also notice the effects of partially stopping the access of air to the tracheæ. The apparatus above mentioned is described in various forms as presented by Insects of different orders, and is figured from the following species:—*Meloë proscarabæus, Melolontha vulgaris, Hydrophilus piceus, Lamia textor, Lucanus cervus, Pieris rapæ,*

Vanessa urticæ, Bombus terrestris, Musca vomitoria, Pulex canis, Pentatoma baccarum, and *Periplaneta orientalis.*

LEYDIG, F. Der Eierstock und die Samentasche der Insecten. Zugleich ein Beitrag zur Lehre von der Befruchtung. Nova Acta Acad. Nat. Cur. xxxiii. pp. 88, pls. 5: 1866.

The ovary and seminal receptacle in Insects. Likewise a contribution to the theory of fecundation.

PLATEAU, F. Sur la force musculaire des Insectes. See Arch. Cosmol. 1867, pp. 88–95.

SCHULTZE, MAX. Ueber die Endorgane des Sehnerven im Auge der Gliederthiere. Archiv für mikr. Anat. Band iii. pp. 404–408.

MARTENS (Preuss. Exp. n. Ost-Asien) indicates the general entomological results of the Prussian expedition. He notices the general character of the insects of Madeira (pp. 11, 12), remarks briefly upon the habits of *Halobates* (p. 32), indicates some of the more remarkable features of the insect-fauna of Rio Janeiro (p. 36), and dwells at somewhat greater length upon the entomology of Japan (pp. 128, 129). In the latter country he noticed the European *Vanessa atalanta*. The most abundant Butterflies were species of *Pieris, Colias,* and *Lycæna*. The Japanese names for Butterflies and their larvæ are mentioned. Martens also notices the *Cicadæ* and Orthoptera, which are numerous; for the latter the Japanese have several distinctive names. The Coleoptera were not so noticeable; but the Japanese books contain many figures of these insects, with distinctive names. The notices of insects of other orders are very brief. In a further notice of Japanese insects (pp. 135–137) Martens notices some of those which are injurious or troublesome to the human inhabitants, of which he gives the Japanese names. The useful insects of Japan are the Silkworms, of which the author notices the existence of 2 species, but he had no opportunity of observing their cultivation.

MORAWITZ (Horæ Soc. Ent. Ross. iii. pp. 42–48) discusses the rules to be observed in forming names from the names of persons. The question, as he puts it, is as to whether the genitive termination should be in *i* or in *ii*, the former having been adopted by him and objected to by Schaum as contrary to the spirit of the Latin language. Kraatz and Kiesenwetter have also expressed a similar opinion. Morawitz quotes from Zumpt to show that, in the best period of Latinity, nouns ending in *ius* and *ium* formed the genitive in *i*, at least with the poets, and that it is very probable that, even where written *ii*, they were pronounced *i*. As a general rule, the question seems to be of little consequence, euphony being the main object to be attained in the ormation of the genitive, at the same time that, as Morawitz justly points

out, it is essential that the whole name of the person in whose honour the species is named should be retained in its original spelling. This would be masked by a strict latinization of the name, as Morawitz has indicated by describing a species of *Akis* in honour of Kraatz, under the name of *A. cratii*, whilst at the same time he states that he shall place it in his collection as *A. kraatzi*. This applies also, as a general rule, to names which, from their terminations, are declinable as Latin words, but, curiously enough, not to the name originally objected to by Schaum, namely, *wulffiusi*, which is manifestly wrong. The termination *ius* here is evidently a latinization inherited from some learned ancestor, and must be treated accordingly. Morawitz points out the absurdity of declining some names which he cites, especially showing how from Tatum we might make *tati*; and the same thing has actually been done by an American entomologist, who describes a species of *Cermatia* under the name of *C. linceci*, thus ascribing a neuter gender to Dr. Lincecum by way of conferring honour upon him.

Frauenfeld (Verh. zool.-bot. Ges. in Wien, xvii. pp. 425–464) publishes an elaborate note upon "Das Insektenleben zur See," giving a list of species captured at sea or on board the 'Novara' during her voyage round the world, arranged in systematic order and in a tabular form, showing the sections of the passage in which the different species were noticed, and the number of specimens observed of each form. This list is followed by a series of notes upon the species, which includes descriptions of some new forms. The number of species is about 180; they include examples of all the orders. Frauenfeld remarks that, from the consideration of the mode of occurrence of these Insects on board ship, we may arrange them under three categories:—1. *Voluntary wanderers*, which occasionally visit a ship when they fall in with it; 2. *Involuntary wanderers*, which are accidentally brought on board and remain in the ship for a longer or shorter time; and, 3. Actual inhabitants of the ship and its cargo. The second of these categories includes the greatest number of species, as, indeed, it is possible that almost any insect may be accidentally carried away on shipboard. The true insect inhabitants of ships known to Frauenfeld are only *Blatta americana* and its parasite *Evania appendigaster*. This paper is of importance in connexion with the interesting question of the dissemination of species by means of commerce.

G. Fritsch (Berl. ent. Zeitschr. 1867, pp. 247–277) records his general observations on the Insect-fauna of South Africa. He remarks that the Spiders, Orthoptera, and Ants (true Ants and Termites) constitute the most striking representatives of the Arthropoda in that part of the world, and that the Lepidoptera and Coleoptera occupy only a second rank. His general observations are illustrated by a multitude of details upon Insects of various orders, but these are for the most part too cursorily treated to allow of any special analysis.

F. Löw (Verh. zool.-bot. Ges. in Wien xvii. pp. 749–751) publishes a note

on the Insects found in the last year's nests of Swallows (*Hirundo rustica* and *Chelidon urbica*) in Carinthia. The most remarkable portions of these contents consisted of a great number of pupæ of small Muscidæ mostly empty or occupied by a parasitic Chalcidite, numerous pupæ of *Ornithomyia avicularia* (Latr.), and in one nest (of *H. rustica*) from 160 to 180 specimens of *Pulex hirundinis* (Kohl) generally *in copulâ*. A young specimen of *Acanthia lectularia* occurred in one nest, but nothing that could be interpreted as *A. hirundinis*.

F. Löw publishes (Verh. zool.-bot. Ges. in Wien, xvii. pp. 751–752) a note on the species of Insects found on the snow in Carinthia (elevation 2700–3400 feet) by R. Kaiser, in the winters of 1858, 1861, and 1862. The number of species is small, but they included a new *Homalota* (*H. glacialis*, Mill.); 2 species of *Nabis* occurred, and *Achorutes murorum* in great quantities.

Peteau and Sélys-Longchamps remark upon the European facies of the fauna of Chili, in connexion with some observations made on this subject by Fauvel (see Record, 1866, p. 310). Ann. Soc. Ent. Belg. x., Comptes Rendus, p. x.

Frauenfeld (Verh. zool.-bot. Ges. in Wien, xvii. p. 485) notices the statements of Deplanche and Vieillard as to the Insects of New Caledonia. The information is very meagre.

Becker (Bull. Soc. Nat. Mosc. xxxix. 2. pp. 202–207, and xl. 1. pp. 106–116) publishes lists of the species of Insects observed by him near Astrachan and Sarepta, on the Kirghis Steppes, and on the island of Birutschi.

J. Milde, in a paper on the animals of Meran (Jahres-Bericht der Schles. Ges. vaterl. Cultur, xliv. pp. 57–58), gives a brief notice of some of the Insects of the neighbourhood of that place.

Bellier de la Chavignerie remarks on the general results of an entomological excursion to the environs of Florence. Bull. Soc. Ent. Fr. 1867, p. lxxxiv.

A. S. Packard has published in the American Naturalist (i. pp. 110–111, 162–164, 220–224, 277–279, 327–329, 391–392) a series of articles on the Insects occurring in the Eastern States at various periods of the year. The later portions are particularly devoted to injurious Insects.

Bilimek has described the fauna of the Cave of Cacahuamilpa in Mexico, including several new species of Insects belonging to various orders. The only species described as blind is a *Lepisma*. Verh. zool.-bot. Ges. in Wien, xvii. pp. 901–905.

Wallace discusses the question of the purpose and origin of the brilliant colouring of many larvæ, especially of Lepidoptera, and suggests that those which present bright colours may be distasteful to birds, and easily recognized by their striking appearance. Pascoe, Weir, M'Lachlan, and Bates remarked upon points connected with this question, the last-named entomologist suggesting the inquiry whether brightly coloured larvæ were subject or not to the attacks of Ichneumonidæ. Proc. Ent. Soc. 1867, pp. lxxx–lxxxi. See also *l. c.* p. lxxxv. See also, on the question whether difference of colour in larvæ indicates difference of sex, a discussion by Westwood, Smith, Stainton, and Bond, *l. c.* p. xci.

Becker (*l. c.* p. 114) discusses the question of the sensibility of Insects to the passing of a pin through them. He describes a *Malachius æneus*, when

pinned, as continuing for a quarter of an hour to feed upon a *Dasytes ater*. He infers that the pain experienced must be very slight.

Hildebrand states that the intervention of Insects is necessary for the fecundation of *Corydalis cava*. International Botan. Congr. London, 1866; Arch. Cosmol. 1867, pp. 197–198.

Bail (Stett. ent. Zeit. 1867, pp. 455–462) gives an account of his observations on epidemic diseases produced in Insects by the growth of parasitic fungi, instancing particularly an epidemic of the common *Scatophaga stercoraria* about Danzig in 1866, and another which attacked various Caterpillars. His observations are published in full in the 'Osterprogramm der Realschule zu St. Johann in Danzig;' and he remarks upon the importance of the study of the conditions of these diseases, as possibly throwing light upon the causes of epidemics in Man and the higher animals.

Frauenfeld (Verh. zool.-bot. Ges. in Wien, xvii. pp. 783–784) notices certain Insects of various orders which made their appearance in unusual abundance in 1867. The Insects noticed, besides *Meligethes æneus* and *Anisoplia austriaca*, are 3 species of Sawflies and *Pontia brassicæ*.

Künstler publishes (Verh. zool.-bot. Ges. in Wien, xvii. pp. 913–962) an elaborate report on injurious Insects of various orders observed in different parts of the Austrian empire in 1866 and 1867. The following statement (*l. c.* p. 914) shows the plants injured and the Insects observed upon them:—

Cereals:—*Zabrus gibbus, Anisoplia austriaca, Oxythyrea stictica, Agriotes segetis, Malachius æneus, Omophlus lepturoides, Sitophilus granarius, Caloptenus italicus, Orthopteron* sp., *Chlorops strigula, Chironomus stercorarius, Agrotis segetum.*

Pulse:—*Oxythyrea stictica.*

Coleworts:—*Athalia spinarum.*

Rape:—*Meligethes æneus, Athalia spinarum.*

Flax:—*Athalia spinarum, Plusia gamma.*

Vines:—*Otiorhynchus ligustici.*

Fruit trees:—*Cheimatobia brumata, Hibernia defoliaria, Amphidasys pomonaria.*

Meadows:—*Penthophora morio.*

Pines:—*Gastropacha pini.*

Leveillé mentions a case of serious injury, including paralysis of one side, supposed to be caused by the bite of an Insect, probably a Beetle. Bull. Soc. Ent. Fr. 1867, p. lxxviii.

A. Forel (Bull. Soc. Vaud. Sci. Nat. ix. pp. 72–84) has given a notice of the Insects attacking the Colza plant in the Canton de Vaud, indicating them successively in order of the vegetation of the plant. The first are the *Altica* (*oleracea, rapæ, nemorum, nigro-ænea, exoleta, brassicæ*, and *atricilla*), followed by *Athalia centifoliæ*, which reappears in August and September. In October and November the larvæ of *Baridius cærulescens* are to be found in excrescences upon the collar of the plant; and the characters of these larvæ are described by the author. They quit the plant in April and May, to become pupæ in the ground. *Meligethes viridescens, æneus*, and *lumbaris*, and *Epurea æstiva* attack the parts of fructification. *Cetonia hirta* is also mentioned by the author in a note as occasionally injurious. The fruit, when formed, is attacked by the larvæ of *Ceuthorhynchus napi* and *syrites*, *Ypso-*

lophus xylostei (Fab.), and *Cecidomyia brassicæ* (Winn.). The last is checked by 2 species of *Platygaster*, *P. boscii* and *P. niger*? (Nees).

Taschenberg criticises the processes recommended by Kreuzberg for the destruction of injurious Insects. The use of sulphurous and muriatic acids in vapour are rejected as themselves injurious to vegetation. The employment of carbon is expensive; and the smoke of coal-tar, recommended for the removal of the Cockchafer, would be troublesome to the neighbours. Zeitschr. ges. Naturw. xxvii. pp. 458–459.

E. S. Morse describes a new method of fitting up boxes for Insects. He uses instead of cork two sheets of stout paper stretched upon a frame. Amer. Nat. i. p. 156.

D. Sharp discusses the question of variation in Insects, and attempts to define the three generally admitted kinds of variation, namely, "races, varieties, and aberrations." Ent. M. Mag. iv. pp. 70, 71.

J. W. Dunning discusses the question of the admissibility to the right of priority of the names of species described in works privately printed and not published, with especial reference to the Australian Buprestidæ described in a pamphlet of this kind by F. W. Hope, the names given in which have been adopted by E. Saunders, to the suppression of those attached to the same insects by later authors. Dunning maintains that printing for private distribution cannot be regarded as equivalent to publication. The opposite side of the argument is taken by Westwood; but Dunning's is supported by several other entomologists. Proc. Ent. Soc. 1867, pp. cix, cx.

COLEOPTERA.

A. *Works in progress.*

Harold, E. von. Coleopterologische Hefte. I. & II. Munich, 1867.

Under this title Von Harold has commenced a journal to be devoted exclusively to Coleoptera, and to appear at irregular intervals. Two parts were published in 1867. The editor promises a general catalogue of Coleoptera.

Schaum, H., & Kiesenwetter, H. von. Naturgeschichte der Insecten Deutschlands. Erste Abtheilung, Coleoptera; Band i. Zweite Hälfte; Lieferung 1. Berlin, 1868 (published in 1867), pp. 144.

The second part of the first volume of this admirable work has been commenced as above indicated. It contains the *Dyticidæ* and *Gyrinidæ*, the former to a great extent worked up by the late Dr. Schaum before his last illness, and completed by Kiesenwetter; the latter entirely Kiesenwetter's work.

Parfitt, E. Natural History of Devon. Part 2. Coleoptera. Exeter, 1867.

This work, which is a catalogue of the Coleoptera of Devonshire, includes about 1000 species. The Recorder has not seen it. In the Ent. Monthly Mag. it is said to be full of errors.

Physis, Recueil d'Histoire Naturelle par M. James Thomson. Première Partie. Paris: 1st August 1867.

Under this title J. Thomson has commenced a publication which, it may be presumed, will be chiefly devoted to the reception of his memoirs on Coleoptera. It will be published at irregular intervals. The first part contains two papers on Longicorn Beetles and the description of a species of *Chelonarium*.

Thomson, C. G. Skandinaviens Coleoptera. Tom. viii. pp. 409 & lxxv (1866), and tom. ix. pp. 407 (1867).

The eighth volume of this excellent work forms really the conclusion of the original design of the author, including the description of the Scandinavian Longicornia, Phytophaga, and Aphidiphaga, together with a complete systematic index to the eight volumes. The ninth volume constitutes a supplement to the first half of the work, containing, besides remarks on species and genera, a series of synoptical tables of the entire classification. In these, which are entirely in Latin, the whole of the families, tribes, genera, and species are tabulated, the tables of the species consisting for the most part of the characters of generic subdivisions adopted in the body of the work, but brought together here in a manner which will assist greatly in making use of the latter. This volume includes the characters of various genera and species detected in Scandinavia since the publication of the first four volumes; some of these are described as new.

B. *Separate Works.*

Ferrari, Count J. A. Die forst- und baumzucht-schädlichen Borkenkäfer (*Tomicides*, Lac.) aus der Familie der Holzverderber (*Scolytides*, Lac.), mit besonderer Berücksichtigung vorzüglich der Europäischen Formen, und der Sammlung des k.-k. Zoologischen Kabinetes in Wien. Vienna, 1867, pp. 96.

The nature of this work is sufficiently indicated by its title. Its contents will be analyzed in their proper place.

Fermouze, Armand. De la Cantharide officinale, *Cantharis vesicatoria*. Thèse de Pharmacie soutenue le 20 Juillet 1867. 4to, pp. 53, with 5 plates.

This thesis, which the Recorder has not seen, is noticed by Guérin in his 'Revue et Magasin de Zoologie,' 1867, p. 452.

Silbermann, —, & Wencker, —. Catalogue des Coléoptères de l'Alsace et des Voges. (Strasbourg), 1866.

The Recorder has not seen this work, which contains descriptions of some new species referred to by Von Heyden, Berl. ent. Zeitschrift, 1867, pp. 379 *et seq.*

Wollaston, T. V. Coleoptera Hesperidum, being an enume-

ration of the Coleopterous Insects of the Cape Verde Archipelago. London, Van Voorst, 1867, pp. xxxix and 285.

In this work Wollaston has worthily continued his researches upon the Coleopterous fauna of the Atlantic islands, and brought out, from a rather more imperfect material than that at his command in treating of the Canarian and Madeiran Archipelagos, some very interesting results. The subject is treated in the same way as in his 'Coleoptera Atlantidum,' and summed up in a similar manner, with a table of geographical distribution. An appendix contains a few additions to the 'Coleoptera Atlantidum.'

C. *Papers published in Journals &c.*

* *Descriptive.*

Abeille de Perrin. Notes Entomologiques. Ann. Soc. Ent. Fr. 4e sér. tome vii. pp. 65–71.

Allard, Ernest. Monographie des Alticides, Tribu de la Famille des Phytophages. (Conclusion.) L'Abeille, tome iii. pp. 418–508: 1867.

Aubé, C. Note sur l'*Hydroporus opatrinus*, Germ. et ses congénères. Ann. Soc. Ent. Fr. 4e sér. tome vii. pp. 256–258: October 15, 1867.

Baly, J. S. New Genera and Species of Gallerucidæ. Trans. Ent. Soc. London, 3rd series, vol. ii. pp. 471–478 : 1866.

——. *Phytophaga Malayana* ; a Revision of the Phytophagous Beetles of the Malay Archipelago, with descriptions of the New Species collected by Mr. A. R. Wallace. (Continued.) Trans. Ent. Soc. London, 3rd series, vol. iv. pp. 77–300, plates 4–5* : August 1867.

This portion contains the *Eumolpidæ* and *Chrysomelidæ*.

Bates, H. W. New Genera of Longicorn Coleoptera from the River Amazons. Ent. Monthly Mag. vol. iv. pp. 22–28 : June and July 1867.

——. New Species of Insects from the Province of Canterbury, New Zealand, collected by R. W. Fereday, Esq. Ent. Monthly Mag. vol. iv. pp. 52–56 & 78–80 : August and September 1867.

All Coleoptera, except a species of *Chrysophanus*.

Becker, J. F. von. Om lysorganet hos *Lampyris splendidula*. Œfvers. af Finska Vet.-Soc. Förhandl. viii. pp. 15–21. [On the luminous organ of *Lamp. splendidula*.]

Bertolini, S. de. I Carabici del Trentino ordinati in Sistema. Atti Istit. Veneto, tom. xii. pp. 751–819.

A list of the *Cicindelidæ* and *Carabidæ* of the district of Trent, with synonyms and remarks on distribution &c.

Bethe, —. Zwei neue deutsche Staphylinen. Stettiner entom. Zeitung, 1867, pp. 307–309.

Bischoff-Ehinger, A. Entomologische Reise von Vogogna nach Macugnaga und dem Monte Moro nach Saas. Mittheil. schweiz. entom. Gesellsch. Band ii. pp. 193–215.

An interesting account of the routes followed, with a tabulated list of species of Coleoptera new to the fauna of the district.

Blanchard, E. Remarks on M. Reiset's paper on the Cockchafer. Comptes Rendus, lxv. p. 1138.

Brendel, Emil. Descriptions of some new species of Pselaphidæ. Proc. Ent. Soc. Philad. vol. vi. pp. 189–194.

Brisout de Barneville, H. Nouveau tableau des *Acalles* avec la description de deux nouvelles espèces et celle de l'*Orchestes quedenfeltii*, Gerhard. Annales Soc. Ent. France, 4e série, tome vii. pp. 57–64.

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. Ann. Soc. Ent. Fr. 4e sér. tome vii. pp. 417–456, plates 11 and 12 (December 11, 1867, & April 1868).

Castelnau, Count F. de. Notes on Australian Coleoptera. Trans. Roy. Soc. Victoria, vol. viii. pp. 30–38: 1867.

Relates to *Cicindelidæ*.

——. Note sur un nouveau genre de Dynastide (*Alcidosoma*). Revue et Magasin de Zoologie, 1867, pp. 113–115.

Chaudoir, — de. Descriptions de Carabiques nouveaux. Ann. Soc. Ent. Fr. 4e sér. tome vii. pp. 259–262: October 15, 1867.

Chevreul, —. Remarks on M. Blanchard's observations, and on M. Reiset's paper on the Cockchafer. Comptes Rendus, lxv. pp. 1138–1140.

Chevrolat, Auguste. Coléoptères de l'île de Cuba. (Suite.) 7me Mémoire. Annales Soc. Entom. de France, 4e série, tome vii. pp. 571–616: April 1868.

Contains the revision of the Cuban species of Buprestidæ, Throscidæ, Eucnemidæ, and Elateridæ.

Cornelius, C. Entwickelungs-Geschichte der *Galleruca calmariensis*, Linné, *G. lythri*, Gyll. Stettiner entom. Zeitung, 1867, pp. 213–214.

——. Zur Naturgeschichte des *Lucanus cervus*, Linné. Stettiner entom. Zeitung, 1867, pp. 435–437.

Cotty, Ernest. Relation de quelques chasses de Coléoptères

rares d'Algérie. Mém. Soc. Linn. du Nord de la France, 1866, pp. 158–179 : 1867.

Crotch, G. R., & Sharp, D. Additions to the Catalogue of British Coleoptera, with descriptions of New Species. Trans. Ent. Soc. London, 3rd series, vol. v. pp. 435–451 : May 1867.

This is the paper referred to in 'Record,' 1866, p. 278.

Crotch, G. R. On the Coleoptera of the Azores. Proc. Zoological Society, 1867, pp. 359–391, plate 23.

In this paper Crotch has treated the Azorean Coleoptera somewhat in the same way that Wollaston has done with those of the more southern groups of Atlantic islands. His general results will be noticed below.

Desbrochers des Loges, —. Description d'un *Apion* nouveau suivie de la diagnose de plusieurs autres espèces du même genre. Mittheil. schweiz. entom. Gesellsch. Band ii. pp. 216–218 : February 1867.

Deyrolle, Achille. Monographie de la Tribu des Zophosites. Ann. Soc. Ent. Fr. 4e sér. tome vii. pp. 73–248, pls. 1–4 : October 15, 1867.

A posthumous memoir, edited by E. Deyrolle.

Dohrn, C. A. Gratias. Stettiner entom. Zeitung, 1867, pp. 437–445.

Contains remarks on the synonymy of some Longicornia.

Eichhoff, W. Neue amerikanische Börkenkäfer-Gattungen und Arten. Berliner entom. Zeitschrift, 1867, pp. 399–402.

——. Neue südeuropäische Borkenkäfer. Ibid. pp. 403–404.

Eichhoff, W. (See Kraatz.)

Fairmaire, Léon. Descriptions de six nouvelles espèces du genre *Ichthyurus* (*Théléphorides*). Stettiner entom. Zeitung, 1867, pp. 114–117.

——. Essai sur les Coléoptères de Barbarie. Cinquième partie. Ann. Soc. Ent. Fr. 4e sér. tome vii. pp. 387–416 : December 11, 1867.

——. Révision des Coléoptères du Chili. (Suite.) Ibid. pp. 617–630 : April 1868.

Contains a list of the Chilian Buprestidæ with descriptions of several new species.

Ferrari, J. A. Nachträge, Berichtigungen und Aufklärungen über zweifelhaft gebliebene Arten in "Die forst- und baumzucht-schädlichen Borkenkäfer." Coleopt. Hefte, ii. pp. 104–115.

This paper contains some corrections and additional remarks upon the author's work on the Tomicides.

Frauenfeld, G. von. Ueber die diessjährigen Verwüstungen des Rapsglanzkäfers in Böhmen und Mähren. Verhandl. zool.-bot. Gesellsch. in Wien, Band xvii. pp. 561–564.

——. (See "Insecta.")

Gautier des Cottes, —. Des Catalogues en général et du dernier "Catalogue des Coléoptères du Bassin Méditerranéen et des lieux adjacents par M. l'Abbé de Marseul" en particulier. Mittheil. schweiz. entom. Gesellsch. Band ii. pp. 158–162: November 1866.

——. Suite de mon Travail précédent sur le genre *Calathus* devant servir de Préface à la Monographie du dit genre. Ibid. pp. 163–169 (November 1866), and pp. 187–193 (February 1867).

In continuation of a former paper (see 'Record,' 1866, p. 283). This paper contains notes upon several known and descriptions of some new species.

——. Monographie du genre *Calathus*. Ibid. pp. 235–260 (August 1867), and 261–286 (October 1867).

A monograph of the species of *Calathus* inhabiting Europe and the basin of the Mediterranean.

Gerhardt, J. (See Kraatz.)

Gernet, C. von. Beiträge zur Käferlarvenkunde. Erster Beitrag. Horæ Soc. Entom. Rossicæ, tome v. pp. 7–22, pls. 1 & 2: 1867.

Gerstaecker, A. Beitrag zur Insekten-Fauna von Zanzibar, nach dem während der Expedition des Baron v. d. Decken gesammelten Material zusammengestellt. Archiv für Naturg. 1867, pp. 1–49.

——. Bemerkungen über einige Paussiden. Stettiner entom. Zeitung, 1867, pp. 429–434.

Girard, M. Sur l'emploi des poulaillers roulants pour combattre les ravages des larves de Hannetons. Ann. Soc. Ent. France, 4e série, tom. vi. pp. 571–576.

Harold, E. von. Zur Kenntniss der Gattung *Canthidium* und ihrer nächsten Verwandten. Coleopt. Hefte, i. pp. 1–61: March 1867.

——. Zur Synonymie zweier *Gymnopleurus*-Arten. Ibid. pp. 73–75.

——. Diagnosen neuer Coprophagen. Ibid. pp. 76–83.

——. Die Arten der Gattung *Caccobius*. Ibid. ii. pp. 1–16.

——. Beiträge zur Kenntniss der Gattung *Oxythyreus*. Ibid. pp. 23–59: 1867.

Harold, E. von. Nachtrag zur Bearbeitung der Gattung *Canthidium*. Coleopt. Hefte, ii. pp. 60–93.

Includes descriptions of many new species.

——. Diagnosen neuer Coprophagen. Ibid. pp. 94–100 : 1867.

——. Notiz über einige Germar'sche Typen. Berliner entom. Zeitschrift, 1867, p. 244.

Synonymic remarks on some *Coprides* described by Germar.

——. Die chilensischen Aphodiden. Ibid. pp. 278–282.

Heyden, L. von. Exotische Xenos-Arten. Berliner entom. Zeitschr. 1867, p. 398.

——. (See Kraatz.)

Horn, G. H. Notes on the Habits of a few California Coleoptera. Proc. Ent. Soc. Phil. vol. vi. pp. 289–293.

——. Description of a new *Pseudomorpha* from California, with notes on the *Pseudomorphidæ*. Trans. Amer. Entom. Soc. vol. i. pp. 151–154 : August 1867.

——. On *Amphizoa insolens*, Leconte. Ibid. pp. 154–158 : August 1867.

——. Notes on the *Zopheri* of the United States. Ibid. pp. 159–162 : August 1867.

——. Descriptions of new genera and species of Western Scarabæidæ, with notes on others already known. Ibid. pp. 163–169 : August 1867.

Kiesenwetter, H. von. Beiträge zur Käferfauna Spaniens. (Zweites Stück.) *Melyridæ* (Fortsetzung), *Ptinidæ*. Berliner ent. Zeitschrift, 1867, pp. 109–134, taf. 2. (See 'Record,' 1866, p. 284.)

In this portion Kiesenwetter gives the results of his investigations of the Spanish *Dasytini* and *Ptinidæ*. It is followed (*l. c.* p. 135) by a note on *Ptinus coarcticollis* (Sturm).

——. Revision der Dasytidengattung *Dolichosoma*. Ibid. pp. 136–140.

Kirsch, Theodor. Beiträge zur Käferfauna von Bogotá. Drittes Stück. (See 'Record,' 1865 and 1866.) Berliner entom. Zeitschrift, 1867, pp. 215–243.

Contains descriptions of *Brenthidæ* and Adelognathous *Curculionidæ*.

Kraatz, G. Beiträge zur Kenntniss der deutschen Käferfauna. Erstes bis fünftes Stück. Berliner entom. Zeitschrift, 1867, pp. 375–393.

These papers consist of synonymic materials obtained by Kraatz from various German entomologists preparatory to the formation of a Catalogue of German Beetles. The contributions in the portion here published are by L. von Heyden (pp. 377–

383), Kraatz himself (pp. 384–388), Scriba (pp. 389, 390), Eichhoff (p. 391), and J. Gerhardt (pp. 392, 393).

Künstler, G. A. (See "Insecta.")

Lacordaire. (See Roelofs.)

Leconte, John L. On the systematic value of Rhynchophorous Coleoptera. Reprinted in Ann. & Mag. N. H. 3rd ser. xx. pp. 291–294.

Letzner, K. Ueber *Coccinella* (*Adalia*, Muls.) *undecimnotata*, Schneid. und ihre Stände. Jahres-Bericht. schles. Ges. vaterl. Cultur, xliv. pp. 161–169.

Mäklin, F. W. Om Strepsiptera och deras förekommande i Finland. Œfvers. af Finska Vet.-Soc. Förhandl. viii. pp. 84–92. [On the Strepsiptera and their occurrence in Finland.]

——. Monographie der Gattung *Strongylium*, Kirby, Lacordaire, und der damit zunächst verwandten Formen. Acta Soc. Sci. Fennicæ, Tomus viii. pp. 217–518, plates 1–4: 1867.

This paper contains a monograph of the genus *Strongylium* and of some of the allied genera.

Marmottan, —. Excursion Entomologique annuelle dans les Vosges et L'Alsace en 1866. Annales Soc. Ent. de France, 4ᵉ série, tome vii. pp. 669–680.

An account of an excursion into Alsace and the Vosges at the end of June 1866, relating chiefly to captures of Coleoptera, with notices of a few Lepidoptera.

Marseul, S. A. de. Description d'espèces nouvelles de Buprestides, et d'un Histéride du genre *Carcinops*. Ann. Soc. Ent. Fr. 4ᵉ sér. tome vii. pp. 47–56: June 12, 1867.

Miller, L. Ein Beitrag zur unterirdischen Käferfauna. *Adelops croaticus*, n. sp. Verhandl. zool.-bot. Gesellsch. in Wien, Band xvii. pp. 551–552.

Morawitz, A. Ueber die in Russland und den angränzenden Ländern vorkommenden *Akis*-Arten. Horæ Soc. Entom. Rossicæ, tome iii. pp. 3–48.

This paper includes a discussion of the rules which should be adopted in the formation of personal specific names (see p. 202).

Motschulsky, V. Enumeration des espèces de Coléoptères rapportées de ses Voyages. 5ᵉ article. Bull. Soc. Nat. de Moscou, tome xxxix. part 2. pp. 225–290, pl. 6, and tome xl. part 1. pp. 39–103.

A synopsis of the *Latridii*, with diagnoses of the known species and descriptions of new ones. Of the 30 figures contained in the plate, only the first eleven are referred to in the text.

Murray, Andrew. List of Coleoptera received from Old Calabar, on the west coast of Africa. Annals & Mag. Nat. Hist. 3rd ser. vol. xix. pp. 167–180, 334–340, and vol. xx. pp. 20–23, 83–95, & 314–323.

Pascoe, F. P. Characters of some new genera of the Coleopterous family *Cerambycidæ*. Annals & Mag. Nat. Hist. 3rd ser. vol. xix. pp. 307–319: May 1867.

——. Diagnostic characters of some new genera and species of *Prionidæ*. Ibid. pp. 410–413: June 1867.

——. *Longicornia Malayana*; or, a descriptive Catalogue of the species of the three Longicorn families *Lamiidæ*, *Cerambycidæ*, and *Prionidæ*, collected by Mr. A. R. Wallace in the Malay Archipelago. (Continued.) Trans. Ent. Soc. London, 3rd series, vol. iii. pp. 337–464, plates 14–15: June 1867.

——. Supplement to the List of Australian Longicornia. Journ. Linn. Soc. Zool. vol. ix. pp. 300–308.

Pelikan, A. von. Ueber Getreide-Verwüstungen im Banate durch *Anisoplia*. Verhandl. zool.-bot. Gesellsch. in Wien, Band xvii. pp. 693–696.

Piochard de la Brûlerie, —. Nouvelles espèces de Coléoptères de la famille des Carabiques, d'Espagne, et des îles Baléares. Bull. Soc. Ent. France, 1867, pp. lxxix, lxxx.

——. Rapport sur l'excursion faite en Espagne par la Société Entomologique de France pendant les mois d'Avril, Mai et Juin 1865. Ann. Soc. Ent. France 4e sér. tome vi. pp. 501–544.

An interesting account of the excursion, with notes on the Coleoptera met with.

Puton, Auguste. Note sur le genre *Xyloterus*, Erichson. Annales Soc. Entom. de France, 4e série, tome vii. pp. 631–634: April 1868.

Putzeys, Julius. Note sur les *Notiophilus*. Mém. Soc. Roy. Sci. Liége, 2e série, tome i. pp. 153–169: 1866.

——. Etude sur les *Amara* de la Collection de M. le Baron Chaudoir. Ibid. pp. 171–283: 1866.

——. Révision générale des Clivinides. Annales de la Soc. Ent. de Belgique, tome x. pp. 1–242: 1866.

——. Additions aux *Amara*. Stettiner entom. Zeitung, 1867, pp. 169–178.

Reiche, L. Quelques Remarques sur la Monographie du genre *Anthaxia*, publiée par M. de Marseul, &c. Ann. Soc. Ent. France, 4e sér. tome vi. pp. 577–580.

Reiset, J. Mémoire sur les dommages causés à l'agriculture

par le hanneton et sa larve; mesures à prendre pour la destruction de cet Insecte. Comptes Rendus, lxv. pp. 1125–1138.

Roelofs, W. Notice sur un nouveau genre de Curculionides d'Australie. Annales de la Soc. Ent. de Belgique, tome x. pp. 243–248, pl. 1: 1866.

This paper is followed by a note by Professor Lacordaire.

——. Description d'un nouveau genre de Curculionides de Monte-Video. Ibid. pp. 251, 252.

Rye, E. C. Notes on the unnamed species in Mr. Waterhouse's Catalogue of British Coleoptera. Ent. Monthly Mag. vol. iii. pp. 231–235.

——. Coleoptera.—New British species, corrections of nomenclature, &c., noticed since the publication of the Entomologist's Annual, 1867. Entom. Annual, 1868, pp. 54–80.

In this article the author, as usual, furnishes us with a summary of all the work done during the year on British Coleoptera. It is of far less extent than that for the year 1866, the total number of notices being only 55.

Saunders, Edward. Descriptions of six new species of *Buprestidæ* belonging to the Tribe *Chalcophorides*, Lacordaire. Trans. Ent. Soc. London, 3rd series, vol. v. pp. 429–434, pl. 22: May 1867.

——. Notes on rare and descriptions of new species of *Buprestidæ* collected by Mr. James Lamb in Penang. Ibid. pp. 509–521, pl. 25: December 1867.

Schaufuss, L. W. Monographie der Scydmæniden Central- und Südamerika's. Nova Acta Acad. Nat. Cur. tom. xxxiii. pp. 103, pls. 4: 1866.

A valuable memoir, containing some general remarks on the history and literature of the family, and on the geographical distribution of the species, besides the systematic description of the species from Central and South America.

——. Beitrag zur Gruppe der *Malacodermata*. Stettiner entom. Zeitung, 1867, pp. 81–85.

Consists of descriptions of new species.

——. Entomologische Notizen. I. Nachtrag zur Monographie der Sphodrinen. Coleopt. Hefte, i. pp. 62–67: 1867.

——. Entomologische Notizen. Ibid. ii. pp. 17–22: 1867.

On some Rhynchophorous Beetles from Spain.

Schiödte, J. C. De Metamorphosi Eleutheratorum Observationes. Bidrag til Insekternes Udviklingshistorie. (Continued.) Naturhist. Tidsskrift, 3rd series, vol. iv. pp. 415–552, pls. 12–22.

This paper is in continuation of one in the third volume of the same journal (see 'Record,' 1865, p. 405, where, by an oversight, the volume stands as viii.). Its contents relate exclusively to the larvæ of Geodephagous Beetles. At the commencement is an elaborate tabular analysis of the *generic* larval characters, and at the close a few pupæ are briefly described.

Scriba, W. Fünf neue *Leptusa*-Arten. Coleopt. Hefte, i. pp. 68–72 : March 1867.

——. Die Käfer im Grossherzogthum Hessen und seiner nächsten Umgebung. (Fortsetzung.) Zwölfter Bericht der Oberhessischen Gesellsch. für Natur- und Heilkunde, pp. 1–51 : 1867.

This concludes Scriba's catalogue of the Hessian Beetles. It is to be followed by a supplementary part.

——. (See Kraatz.)

Seidlitz, Georg. Einige entomologische Excursionen in den Castilischen Gebirgen im Sommer 1865. Berliner entom. Zeitschrift, 1867, pp. 167–191.

Contains an account of the author's Spanish travels in search of Coleoptera, with remarks on the species met with and descriptions of numerous new species.

——. Zur Coleopterenfauna Europa's. Ibid. pp. 431–434.

Contains chiefly synonymic observations.

Sharp, D. On the British species of *Agathidium*. Trans. Ent. Soc. London, 3rd series, vol. ii. pp. 445–452 : 1866.

——. (See Crotch.)

Solsky, S. Matériaux pour servir l'étude des Insectes de la Russie. I. Notes sur quelques Coléoptères nouveaux ou peu connus. Horæ Soc. Entom. Rossicæ, tome iv. pp. 79–96 : 1866.

——. Matériaux pour servir à l'étude des Insectes de la Russie. II. Insectes nouveaux et remarques sur des espèces connues. Ibid. pp. 179–185 : 1866.

——. Coléoptères nouveaux. Horæ Soc. Entom. Rossicæ, tome v. pp. 29–37 : 1867.

Stierlin, G. Beschreibung einiger neuen Käfer-Arten. Mittheil. schweiz. entom. Gesellsch. ii. pp. 218–228 : February 1867.

Suffrian, E. Synonymische Miscellaneen, xxx. Stettiner entom. Zeitung, 1867, pp. 445–449.

On *Cicindela sex-guttata* (Fab.).

——. Verzeichniss der von Dr. Gundlach auf der Insel Cuba

gesammelten Chrysomelinen. Archiv für Naturg. 1867, pp. 283–328.

A continuation of the paper commenced in the volume of the 'Archiv' for 1866.

Thomson, James. D'une Classification nouvelle de la famille des Cérambycides (Insectes Coléoptères). Physis, tome i. pp. 1–10: August 1, 1867.

——. Révision de la sous-tribu des Dorcadionites (Famille des Cérambycides, insectes Coléoptères). Physis, tome i. pp. 10–84: August 1, 1867.

Tournier, H. De quelques nouveaux Coléoptères d'Europe et d'Algérie. Annales Soc. Entom. de France, 4e série, tome vii. pp. 561–570, pl. 13: April 1868.

Villa, A. & G. B. Sui Coleotteri del Biellese indicati da Eugenio Sella. Atti Soc. Ital. di Sci. Nat. vol. ix. pp. 218–223: June 1866.

Notes on the Coleoptera of the country round Biella, containing remarks on Sella's list of the Beetles of that district, indications of species since detected there, and some strictures on the Stettin Catalogue of European Coleoptera. The latter consist chiefly of objections to the citation of species which have been transferred to new genera under the names of the authors who have effected this transfer, several of Villa's species having thus been ascribed to Heer and other writers.

Vollenhoven, S. C. Snellen van. Beschrijving van eenige nieuwe Soorten van Coleoptera uit Oost-Indie. Tijdschrift voor Entomologie, 2de ser. Deel i. pp. 222–229, pls. 11 & 12: 1866.

Wankowiez, J. Notices sur divers Coléoptères. Ann. Soc. Ent. France, 4e série, tome vii. pp. 249–255: October 15, 1867.

Contains descriptions of 3 new species of Beetles from Lithuania (*Bitoma*, *Ipidia*, and *Quedius*), and a note on the varieties of *Oxyporus maxillosus*.

Waterhouse, C. O. On some new Lamellicorn Beetles belonging to the family *Melolonthidæ*. Ent. Monthly Mag. vol. iv. pp. 141–146: November & December 1867.

——. Note on a genus of Dynastid-Lamellicorns, belonging to the family *Pimelopidæ*. Trans. Ent. Soc. London, 3rd series, vol. v. pp. 531–533, pl. 27: December 1867.

Wttewaal, J. Twee Waarnemingen van wijlen Dr. J. Wttewaal, medegedeeld door Snellen van Vollenhoven. Tijdschrift voor Entom. 2de serie, Deel ii. pp. 21–30, pl. 1.

This paper contains two notices by the late Dr. Wttewaal,

the first of which relates to the pupa of *Pyrochroa rubens*, the second to a Lepidopterous insect.

† *Anatomical and Physiological.*

Landois, H., & Thelen W. Zur Entwickelungsgeschichte der facettirten Augen von *Tenebrio molitor*, L. Zeitschrift für wiss. Zoologie, Band xvii. pp. 34–43, pl. 5.

An elaborate description of the development of the facetted eyes of the perfect Beetle in the larva of *Tenebrio molitor*.

In his 'Coleoptera Hesperidum,' devoted to the Coleopterous insects of the Cape Verde group of islands, Wollaston embodies the results of his own investigations and of those of John Gray, F. W. Hutton, A. Fry, and H. Dohrn. Of the nine larger islands composing the Cape Verde archipelago, only six have been examined for Coleoptera, the three others, situated nearest to the African coast, not having been visited by the author or his friends. These are known as the "Salt Islands;" and although it is probable they will present some interesting peculiarities, their investigation could hardly lead to any change in the general results at which Wollaston has arrived. The total number of species ascertained by Wollaston is 278, distributed as follows in the primary groups adopted by him :—

Heteromera	49
Brachelytra	42
Necrophaga	39
Geodephaga	39
Rhynchophora	27
Priocerata	18
Cordylocerata	16
Phytophaga	14
Pseudotrimera	14
Philhydrida	13
Hydradephaga	7
Eucerata	0
	278

Thus the numerical proportions of the groups are in general nearly the same as in the more northern groups of islands, except that the Heteromera and Rhynchophora have changed places—a circumstance which the author regards as in accordance with the nature of the species of these groups, the Heteromera being better suited than the Rhynchophora for the present condition, at all events, of the arid Cape Verde islands. The number of species ascertained to exist in each island is stated by the author as follows :—

S. Antonio	114
S. Vicente	132

S. Nicolão	27
S. Iago	130
Fogo	93
Brava	61

The dominant forms are the Heteromerous genera *Oxycara* and *Trichosternum*, representatives of which occur everywhere beneath stones and rubbish from the sea-level to the summits. These exist in numerous forms, described by Wollaston as species, resembling the species of the genus *Hegeter*, so abundant in the Canaries, very closely. *Trichosternum* in like manner represents the Madeiran genus *Hadrus*; and the relations of these forms seem to have suggested to Wollaston's mind the possibility (which, however, he finally denies) that the Cape Verde genera may be "geographical phases" of their more northern relatives. Other dominant forms are *Opatrum* and a new Rhynchophorous genus (*Dinas*) allied to the Canarian *Herpysticus*. Wollaston notices as eminently characteristic, though not strictly "dominant," *Microplinus echinatus*, sp. n., *Cratognathus labiatus* (Erichs.), species of *Scymnus*, *Ammidium ciliatum* (Erichs.), *Aphanarthrum hesperidum*, sp. n., *Litargus 3-fasciatus* (Woll.), and *Sunius nigromaculatus* (Motsch.).

At the same time that the general character of the Coleopterous fauna is decidedly in accordance with that prevailing in the more northern groups, certain genera which may be regarded as highly characteristic of the latter are absent in the Cape Verde islands, especially *Tarphius*, *Laparocerus*, and *Atlantis*. *Calathus*, *Trechus*, *Acalles*, and *Helops* are also noticed by Wollaston as being in a less degree characteristic Northern Atlantic forms absent in the Cape Verde archipelago.

Upon the question of the right of many of the so-called species to hold specific rank Wollaston appears to entertain some doubt; and here, as in his 'Coleoptera Atlantidum,' he indicates that many forms described under specific names are so nearly allied to others existing either in other islands of the group, in the more northern archipelagos, or in Europe, that if they had occurred upon a continuous region he would have hesitated long before regarding them as distinct; and he states that, in his opinion, if subsidences so great as those necessary for breaking up an ancient Atlantic continent into a few scattered islands may be admitted to have taken place, it requires "no stretch of the imagination to conclude that a very large majority of such insular departures from a central form as those which we now meet with would have resulted from them as a matter of course, and would have been rapidly matured from their respective types." Of the 169 genera hitherto detected in the Cape Verdes, 123 are found in the more northern archipelagos, whilst of the 278 "species" here recorded, only 107 are common to the two sets of islands. Taking the genera, again,

the similarity of the Cape Verde islands to the Canaries and Madeiras (combined) is greater than that between the two latter archipelagos; and the whole evidence points overwhelmingly, as Wollaston remarks, to the conclusion that these islands are "the outposts of a single gigantic province which has been rent asunder, and is now principally submerged."

Crotch, in his memoir on the Azorean Coleoptera (Proc. Zool. Soc. 1867, pp. 359–391), enumerates in all 213 species of Beetles as known to occur in those islands; but of these 12 are cosmopolitan forms, reducing the number to 201. Of these only 30 are regarded by the author as belonging to the Atlantic fauna, thus leaving 171 European species. The great proportion of these to the whole may undoubtedly be due, as Crotch suggests, to the fact that the collections have been made for the most part in the lower and more cultivated districts, and that an investigation of the districts more remote from the coasts and the towns would furnish a larger number of Atlantic forms; but the results of the present investigations seem to show that the European species will probably always bear a larger proportion to the Atlantic ones than in the more southern groups. But of the 171 European species enumerated, Crotch believes that only 70 are truly indigenous, the remaining 101 having probably been introduced by colonists.

In comparing the Coleopterous fauna of the Azores with those of the Madeiras and the Canaries, Crotch finds the closest relationship with the former group of islands. The Azores and Madeira have 140 species in common; but of these, 123 occur also in Europe, out of which 97 likewise inhabit the Canaries. Only 8 are peculiar to the Azores and Madeira, and 8 more are common to these islands and the Canaries; these constitute the truly Atlantic species, among which a *Paramecosoma*, an *Homalium*, and a *Phlœophagus* are regarded by the author as "autochthonous."

The Azores and Canaries have 114 species in common, only 2 of which are peculiar to the two groups of islands. Two species are common to the Azores and the Salvages; 3 species, namely, *Æolus mellículus*, *Monocrepidius posticus*, and *Tæniotes scalaris*, occur in America; and a fourth, *Heteroderes azoricus*, is probably derived by modification from an American species. *Staphylinus hesperus* (a new species) has a close ally at the Cape of Good Hope, and *Elastrus dolosus* finds its congeners only in Madagascar, and in external form closely resembles some Elaters from the Cape of Good Hope.

The proportions of the families, as compared with those occurring in the Madeiras and Canaries, are shown by Crotch in the following table:—

	Azores.	Mad. et Can.
Brachelytra	47	215
Necrophaga	38	219
Rhynchophora . . .	27	282
Geodephaga	27	188
Priocerata	16	135
Cordylocerata . . .	16	64
Heteromera	15	172
Philhydrida	8	29
Pseudotrimera . . .	7	30
Eucerata	5	22
Hydradephaga* . . .	4	29
Phytophaga	3	64

Gerstäcker has commenced (Arch. für Naturg. xxxi. pp. 1–49) a memoir on the Coleoptera of Zanzibar, chiefly from materials collected by Von der Decken and Kersten. He remarks that the relationship of the Coleoptera of the district in which these Insects were collected (the nature of which he describes), is rather with those inhabiting Caffraria and Port Natal than with the Beetle-fauna of Abyssinia and Mozambique. The part here cited extends to the Lamellicornia, and includes 91 species, 58 of which are described as new.

Frauenfeld (Verh. zool.-bot. Ges. in Wien, xvii. pp. 428–429 and 435–439) publishes a list of Coleoptera observed on board the 'Novara.' Most of them are forms which, from their habits, would naturally be introduced with stores of various kinds.

Scriba has completed his catalogue of the Coleoptera of the grand duchy of Hesse and the neighbourhood. Bericht xii. der Oberh. Gesellsch. für Nat.- und Heilkunde, pp. 1–51.

A. Murray has resumed his descriptive list of the Coleoptera of Old Calabar (Ann. & Mag. N. H. 3rd ser. xix. and xx.). The portions published last year relate to the groups from the *Nitidulidæ* to the *Malacodermata*.

Ernest Cotty publishes (Mém. Soc. Linn. du Nord de Fr. 1866, pp. 158–179) some general notes on his experience of collecting Beetles in Algeria. The species particularly referred to will be cited hereafter.

Seidlitz publishes (Berl. ent. Zeitschr. 1867, pp. 167–178) an account of excursions in the mountains of Castile, with notes on species observed by him.

Bischoff-Ehinger publishes (Mitth. schw. ent. Gesellsch. ii. pp. 193–215) an account of two Alpine excursions made by him,—the first, in company with Imhoff, from Vogogna to Macugnaga; the second, with Stierlin, from the Monto Moro to Saas. At the end of the paper he gives a tabulated list of Coleoptera collected, with observations as to the altitude and situations in which the species were found.

Reports on Coleoptera collected in various parts of Germany are published by Rottenberg (Berl. ent. Zeits. 1867, pp. 408–415), H. Fuss (*l. c.* pp. 415, 416), F. Stein & Kellner (*l. c.* p. 417).

Abeille de Perrin (Ann. Soc. Ent. Fr. 4e sér. vii. pp. 70, 71) gives a list of rare Coleoptera taken in Provence.

* Omitted by the author in his Table.

H. S. Gorham publishes notes on Coleoptera collected at Southend (Ent. M. Mag. iv. p. 110), and R. Hislop a list of Beetles taken in Morayshire (*l. c.* pp. 110–112).

Rye publishes (Ent. M. Mag. iv. pp. 164, 165) a list of Coleoptera captured at Putney. He also notices various Coleoptera captured by him at West Wickham (*l. c.* pp. 64–66), Wimbledon (*l. c.* iii. p. 214), and in Coombe Wood, Surrey (*l. c.* iv. pp. 83–85).

D. Sharp publishes a list of Coleoptera collected by him in the south of Scotland in the spring of 1867, with indications of those new to the Scotch Insect-fauna. Ent. M. Mag. iv. pp. 107–109.

V. C. de Rivaz notices his finding a great quantity of Beetles of various groups collected on the sand of a small bay between Ramsgate and Margate. Ent. M. Mag. iv. pp. 17, 18.

E. C. Rye (Ent. M. Mag. iii. pp. 231–235) has published a series of notes on the identification of the species of Coleoptera left without names by Waterhouse in his catalogue of British Beetles.

Goureau (Insectes nuisibles &c.) refers to various species of this order which he regards as injurious to man, to the domestic animals, and to manufactured articles. Several species of *Dytiscus* are described as destroying the spawn and young fry of freshwater fishes, *Tenebrio molitor* as feeding on flour and meal, *Clerus apiarius* and *alvearius* as injurious in bee-hives, *Ptinus fur* and the *Anthreni* as destructive of dried animal matters, several species of *Anobium* and *Ptilinus* as injurious to woodwork, species of *Dermestes* as feeding on animal matters, *Cantharis vesicatoria* because its emanations may prove injurious, *Lixus paraplecticus* as being supposed by Linné the cause of the poisonous effects of *Phellandrium aquaticum*, *Sitophilus oryzæ* as injuring rice in stores, *Callidium sanguineum* and *variabile* as feeding upon wood, *Gracilia pygmæa* as living in osiers, and *Necydalis rufa* as destroying woodwork. Curiously enough, the common grain-Weevil (*Sitophilus granarius*) is altogether omitted, as well as a few other species which have at least an equal right with some of those described to figure in such a work as this.

Landois, in his memoir on the sounds produced by Insects (Zeitschr. für wiss. Zool. xvii. pp. 123–134) discusses those emitted by various species of Beetles. The Longicorn Beetles (pp. 124–126), as is well known, produce their peculiar sound by the friction of the sharp inner posterior edge of the prothorax over a transversely ribbed antescutellar process of the mesothorax. These fine ribs or ridges occur in all Longicornia, although the sound produced by many of them (even *Prionus coriarius*) is not perceptible by the human ear. Landois gives the following measurements of the ridges in a large and a small species :—

	Cerambyx heros.	*Grammoptera ruficornis.*
Length of ridged space	3·4 millim.	0·375 millim.
Breadth of ridged space	3 „	0·25 „
Number of ridges	238	113
Thickness of each ridge	0·014 „	0·0033 „

In *Necrophorus* (pp. 127–129, pl. 10. figs. 6 & 7) the fifth ab-

dominal segment, which is very large above, shows in the middle two narrow longitudinal raised bands, rather wider apart in front than behind. These are formed by a great number of fine ribs (from 126–150). The truncated elytra have a sharp ridge on the hinder margin beneath, near the suture; and when the fifth abdominal segment is moved up and down by muscular action, the friction of the elytral ridge over the riblets of the longitudinal ridges of the abdomen produces the sound emitted by these Insects. In *Geotrupes* (pp. 129, 130, pl. 10. fig. 8) the sound-producing apparatus is appended to the hinder coxæ. On the underside of these coxæ there is a raised band, divided by transverse lines into a great number of fine ribs. Upon these the sharp hinder margin of the third abdominal segment is rubbed, and the friction produces a grating sound. The number of ribs on each of the coxal ridges is about 100; the thickness of the ribs in *G. vernalis* is 0·02 millim. and in *G. sylvaticus* 0·025 millim. Landois describes (pp. 130, 131) the jumping of the Elateridæ and the sharp little sound caused by the snapping of the prosternal process into the cavity of the mesosternum; also the ticking of *Anobium* (pp. 131, 132), the mode of production of which has been a good deal discussed of late by some English entomologists. He describes the Insects as fixing themselves firmly on all their six feet, and then tapping against the neighbouring wood by a series of hammering movements of the whole body backwards and forwards. The ticking is caused by the contact of the mandibles with the wood. The humming noise produced by the Cockchafers (*Melolontha*) during flight is produced by a peculiar arrangement of the closure of the tracheæ, described by the author in another paper (see p. 201). To this apparatus a sort of tongue is appended in the Cockchafers; and this, being set in motion by the rapid passage of the air during flight, gives rise to the well-known humming noise.

Mocquerys has indicated that the derivation, and consequently the adulteration, of wool may be ascertained by the remains of Beetles contained in it. An anonymous writer gives a list of the species (48) found in Russian wool, derived from a case exhibited by Mocquerys in the Paris Exhibition of 1867. (Horæ Soc. Ent. Ross. v. p. 26.)

Lindemann (Bull. Soc. Nat. Mosc. xxxix. pt. 2. pp. 314–315) announces as a remarkable discovery that "some pupæ of Beetles, in becoming transformed into Beetles, strip off their pupa-skin!" Dohrn remarks upon this announcement (Stett. ent. Zeit. 1867, pp. 316–318).

Cicindelidæ.

Castelnau publishes (Trans. Roy. Soc. Vict. viii. pp. 30–38) some notes on Australian Cicindelidæ, in which he calls attention to the absence of those Insects in the southern parts of Australia, and indicates their distribution in other regions of that continent. A *Megacephala* has occurred in Western Queensland; *Tetracha* occurs in the north and east, *Distipsidera* in Queens-

land; and *Cicindela* is numerously represented on the eastern coast. Several new species are described by the author. The author also remarks upon the Cicindelidæ of New Zealand, and describes the larvæ of *C. tuberculata* and *C. parryi*.

Cicindela. The natural history of the American species of this genus is briefly noticed in Amer. Nat. i. pp. 552–534, where also 6 of the common species are figured.

Schiödte (Naturh. Tidsskr. 3rd ser. iv.) describes and figures the larvæ of the following species:—*C. hybrida* (Linn.), p. 440, pl. 12. figs. 1–6, and *C. campestris*, p. 444, and the pupa of *C. campestris*, p. 543, pl. 12. fig. 7.

Ernest Cotty (Mém. Soc. Linn. Nord Fr. 1866, pp. 159–163) notices the habits of *Megacephala euphratica* (Oliv.) and *Cicindela littorea* (Forsk.). The former is found in salt marshes, where it lives in holes about two feet deep, from which it issues in the morning and evening twilight during the hottest months of the year.

Cicindela fischeri (Adams). Note by Löw on its occurrence in Austria (Verh. zool.-bot. Ges. in Wien, xvii. p. 748).

Cicindela campestris. A black variety noticed by T. Chapman, Ent. M. Mag. iii. p. 251.

Perty (Mitth. naturf. Ges. in Bern, 1867, p. 305, fig. 1) describes and figures a specimen of *Cicindela campestris*, with the elytra abbreviated and divaricated at the suture.

Cicindela sexguttata. Suffrian (Stett. ent. Zeit. 1867, pp. 445–449) discusses the variations of this species, and indicates that *C. patruela* (Dej., Lec.) is a variety corresponding to the var. *connata* of the European *C. campestris*.

New species:—

Megacephala howittii, Castelnau, Trans. Roy. Soc. Vict. viii. p. 31, Cooper's Creek, Australia.

Tetracha waterhousii, Castelnau, *l. c.* p. 32, Central Australia; *T. bostockii*, Cast. *l. c.* p. 36, and *T. hopei*, Cast. *l. c.* p. 37, West Australia.

Distipsidera strangei, Castelnau, *l. c.* p. 33, Australia.

Cicindela feredayi, Bates, Ent. M. Mag. iv. p. 53, New Zealand.

Cicindela coquerelii, Fairmaire, Ann. Soc. Ent. Fr. 4e sér. vii. p. 387, Morocco.

Cicindela. Castelnau (*l. c.*) describes the following Australian species of this genus:—*C. masteri*, p. 33, New South Wales; *C. wilcoxii*, p. 34, Clarence River; *C. circumcincta*, ibid., East Australia and New Caledonia; *C. dunedensis*, p. 35, New Zealand; *C. macleayi*, p. 37, West Australia.

Myrmecoptera nobilitata, Gerstäcker, Arch. f. Naturg. xxxi. p. 9, Zanzibar.

Carabidæ.

Schiödte (Naturh. Tidsskr. 3rd ser. iv.) describes and figures the larvæ of the following species of this family:—*Omophron limbatum* (Linn.), p. 445, pl. 12. figs. 8–17, and the pupa, p. 545, pl. 13. fig. 1; *Elaphrus cupreus* (Duft.), p. 449, pl. 13. figs. 2–8; *E. riparius* (Linn.), p. 452, pl. 13. figs. 9–11; *Notiophilus biguttatus* (Fab.), pp. 452–456, pl. 13. figs. 12–17, and pupa, p. 545, pl. 13. fig. 18; *N. aquaticus* (Fab.), p. 456, pl. 13. fig. 19; *Leistus rufomarginatus* (Duft.), pp. 456–460, pl. 15. figs. 1–6; *L. rufescens* (Fab.), p. 460,

pl. 15. figs. 7–9, and pupa, p. 545, pl. 15. fig. 10; *L. spinilabris* (Fab.), p. 461, pl. 15. figs. 11, 12; *Nebria brevicollis* (Fab.), p. 461, pl. 14. figs. 1–7, and pupa, p. 545, pl. 15. fig. 14; *N. livida*, p. 465, pl. 15. fig. 13; *Loricera pilicornis* (Fab.), p. 465, pl. 14. figs. 8–16, and pupa, p. 544, pl. 20. fig. 1; *Cychrus rostratus* (Linn.), p. 469, pl. 18. figs. 1–9; *Calosoma*, *Procrustes*, and *Carabus*, tabular synopsis of larvæ, pp. 473–479; *Calosoma sericeum* (Fab.), p. 480, pl. 16. figs. 15–18; *C. inquisitor* (Linn.), p. 482; *Procrustes coriaceus* (Linn.), p. 483, pl. 16. figs. 1–4; *Carabus intricatus* (Linn.), p. 485, pl. 17. figs. 1–4; *C. violaceus* (Linn.), p. 486, pl. 17. figs. 5–8, and pupa, p. 544, pl. 16. fig. 5; *C. glabratus* (Fab.), p. 488, pl. 16. figs. 6–8; *C. nemoralis* (O. F. Müll.), p. 490, pl. 16. figs. 9–11; *C. cancellatus* (Ill.), p. 491, pl. 17. figs. 9–12; *C. rossii* (Dej.), p. 493; *C. granulatus* (Linn.), p. 493, pl. 17. figs. 13–15; *C. clathratus* (Linn.), p. 494, pl. 16. figs. 12–14; *Scarites lævigatus* (Fab.), p. 496, pl. 18. figs. 10–16; *Scarites*, sp., p. 500; *Dyschirius thoracicus* (Fab.), p. 500, pl. 18. figs. 17–23; *Broscus cephalotes* (Linn.), p. 504, pl. 19. figs. 1–8, and pupa, p. 545, pl. 20. fig. 2; *Pterostichus nigrita* (Fab.), p. 507, pl. 19. figs. 9–16, and pupa, p. 545, fig. 17; *P. melanarius* (Ill.), p. 511; *P. oblongopunctatus* (Fab.), p. 512; *Anchomenus marginatus* (Linn.), p. 512, pl. 20. figs. 11–14; *A. mœstus* (Duft.), p. 514, pl. 20. fig. 16; *A. angusticollis* (Fab.), p. 514, pl. 20. fig. 15; *Patrobus excavatus* (Payk.), p. 514, pl 21. figs. 1–5, and pupa, p. 545, fig. 6; *Bembidium bipunctatum* (Linn.), p. 518, pl. 20. figs. 17–22; *B. pallidipenne* (Ill.), p. 521, pl. 20. fig. 23; *Chlænius vestitus* (Fab.), p. 522, pl. 20. figs. 3–9; *C. nigricornis* (Fab.), p. 525, pl. 20. fig. 10; *Amara convexiuscula* (Marsh.), p. 526, pl. 21. figs. 7–11, and pupa, p. 545, fig. 12; *A. spinipes* (Linn.), p. 530; *A. apricaria* (Fab.), ibid.; *A. livida* (Fab.), ibid.; *A. familiaris* (Duft.), p. 531; *A. patricia* (Duft.), ibid.; *Harpalus æneus* (Fab.), p. 531, pl. 22. figs. 1–3; *H. ruficornis* (Fab.), p. 535, pl. 22. figs. 4–11; *Stenolophus anglicus* (Voet), p. 535, pl. 22. figs. 12–18; *Bradycellus pubescens* (Payk.), p. 539, pl. 22. figs. 19–23.

G. H. Horn (Trans. Amer. Ent. Soc. i. pp. 152–154) discusses the characters and position of the genus *Pseudomorpha* and its allies, noticing particularly the resemblance to the Dytiscidæ to be found in the form and position of the posterior coxæ. He considers that these Insects form a distinct family (*Pseudomorphidæ*), and "a link from the Carabidæ through the Amphizoidæ to the Dytiscidæ, with undoubted tendencies towards the Gyrinidæ." His views are indicated in the following table of the Adephagous families :—

I. Legs cursorial.
  A. Metasternum attaining the abdomen; hind coxæ separated.
    1. Antennæ inserted on the front ..... *Cicindelidæ*.
    2. Antennæ inserted under the margin of the front .. *Carabidæ*.
  B. Metasternum not attaining the abdomen; hind coxæ contiguous.
    1. Metasternal parapleuræ attaining the abdomen .. *Pseudomorphidæ*.
    2. Metasternal parapleuræ not attaining the abdomen. *Amphizoidæ*.

II. Legs natatorial.
  A. Eyes 2; antennæ filiform ..... *Dytiscidæ*.
  B. Eyes 4; antennæ irregular ..... *Gyrinidæ*.

Gautier des Cottes remarks (Mitth. schweiz. ent. Gesellsch. ii. pp. 158–161) upon various species of this family omitted or classed as varieties in De Marseul's last catalogue, which he criticises severely.

A note by Putzeys, with remarks by Weyers, on some Carabidæ newly discovered in Belgium, is published in the Ann. Soc. Ent. Belg. x. Comptes Rendus, pp. vii–viii. The most noticeable is the Swedish *Bembidium nigricorne* (Gyll.). Weyers adds four more species, *l. c.* p. xii.

Roelofs publishes a list of the Carabidæ collected in September 1865 on the shores of the Zuiderzee. The list includes only 34 species (Tijdschr. voor Ent. 2nd ser. ii. pp. 31–32).

Carabides.

Notiophilus. Putzeys publishes (Mém. Soc. Roy. Liége, 2e sér. i. pp. 153–166) a note upon the European species of this genus, followed by a synoptical table and short characters of the species contained in Chaudoir's collection, and a list of all the described species, with indications of their synonymy. Of the European forms he describes the variations of the following species:—*N. aquaticus* (Linn.), *N. palustris* (Duft.), *N. rufipes* (Curt.), *N. biguttatus* (Fab.), *N. 4-punctatus* (Dej.), *N. punctulatus* (Wesm.), and *N. geminatus* (Dej.); to these must be added, as distinct species, *N. strigifrons* (Baudi) and *N. laticollis* (Chaud.).

Perty (Mitth. naturf. Ges. in Bern, 1867) describes:—a specimen of *Procerus scabrosus* (Fab.) with a tubercular outgrowth at the end of the right anterior femur (p. 305); one of *Carabus granulatus* (ibid. and fig. 2) with greatly abbreviated elytra, and another (p. 307 and fig. 3) with the antennæ entirely absent; one of *C. morbillosus* (ibid.) with a vesicular inflation of the right elytron; and one of *C. auratus* (ibid. and fig. 4) with the left antennæ cleft in its apical portion.

Carabus schönherri (Fisch.) and *C. zakharschevskii* (Motsch.), as European species, noticed by Kraatz, Berl. ent. Zeitschr. 1867, p. 406. The variety of the latter which occurs at Samara is *C. tschlegovii* (Mann.), according to Chaudoir.

Damaster. Notes on this genus by Lewis, Ent. M. Mag. iii. p. 189, & iv. p. 18.

Calosoma curtisii. Notes on the habits of this species are published by C. A. Wilson. The insect is always found near cattle, and is believed by Wilson to lay its eggs under dry cow-dung. Proc. Ent. Soc. 1867, pp. lxxii–lxxiii.

Horn notices (Proc. Ent. Soc. Phil. vi. p. 290) that the *Cychri* of California emit an acrid fluid from the anus, but without any explosion.

Metrius contractus (Esch.). Habits noticed by Horn, Proc. Ent. Soc. Phil. vi. p. 290.

Carabus aumonti (Luc.). Ernest Cotty gives an account of his unsuccessful search for this species in Western Algeria. Mém. Soc. Linn. du Nord Fr. 1866, pp. 163–165.

Carabus cancellatus. On the habits of the larva. Lucas, Bull. Soc. Ent. Fr. 1867, pp. lxiii–lxiv.

Procerus tauricus (Pall.). Gernet describes and figures the larva of this species. Horæ Soc. Ent. Ross. v. p. 8, pl. 1. fig. 1.

New species :—

Notiophilus acuticollis, Putzeys, *l. c.* p. 164, North China; *N. longipennis*, Putz. ibid., Armenia; *N. hardyi*, Putz. *l. c.* p. 165, Newfoundland.

Nebria pazii, Seidlitz, Berl. ent. Zeitschr. 1867, p. 178, Sierra de Bejar.

Leistus megaloderus, Chaudoir, Ann. Soc. Ent. Fr. 4e sér. vii. p. 260, Greece; *L. caucasicus*, Chaud. *l. c.* p. 261, Caucasus; *L. barnevillei*, Chaud. ibid., Asturias; *L. ovipennis*, Chaud. *l. c.* p. 262, Mount Cenis.

Carabus microderus, Chaudoir, *l. c.* p. 259, Anatolia; *C. rumelicus*, Chaudoir, ibid., Roumelia.

Carabus deckeni, Gerstäcker, Arch. f. Naturg. xxxi. p. 10, Zanzibar.

Calosoma tegulatum, Wollaston, Col. Hesp. p. 4 (= *C. maderæ*, Woll. *nec* Fab.), Cape Verde Islands.

Damaster auricollis, C. O. Waterhouse, Trans. Ent. Soc. Lond. 3rd ser. v. p. 529, pl. 27. fig. 1, Japan.

Brachinides.

Casnonia olivieri (Buq.) has been taken near Bone about sugar-canes.—*Pheropsophus* (*Brachinus*) *hispanicus* (Dej.) = *B. litigiosus* (Dej.) and not *B. africanus* (see Record, 1866, p. 299). Fairmaire, Ann. Soc. Ent. Fr. 4e sér. vii. p. 389.

Xenothorax, g. n., Wollaston, Col. Hesp. p. 15. Allied to *Lebia*; prothorax short, hexagonal; palpi very long and slender; tarsi slender, filiform, joint 4 simple; claws minute, unarmed; eyes very large. Sp. *X. hexagonus*, sp. n., Woll. *l. c.* p. 16, Cape Verde Islands.

New species :—

Tarus alutaceus, Wollaston, *l. c.* p. 8, *T. dohrnii*, Woll. ibid., and *T. anchomenoides*, Woll. *l. c.* p. 9, Cape Verde Islands.

Dromius attenuatus, Wollaston, *l. c.* p. 9, Cape Verde Islands.

Dromius ramburii, Piochard de la Brûlerie, Bull. Soc. Ent. Fr. 1867, p. lxxix, Spain.

Metabletus nitidulus, Piochard de la Brûlerie, *l. c.* p. lxxix, Spain.

Metabletus grayii, Wollaston, *l. c.* p. 11, Cape Verde Islands.

Blechrus strigicollis, Wollaston, *l. c.* p. 12, Cape Verde Islands.

Amblystomus lineatus, Wollaston, *l. c.* p. 14, Cape Verde Islands.

Masoreus spinipes, Wollaston, *l. c.* p. 16, and *M. ascendens*, Woll. *l. c.* p. 18, Cape Verde Islands.

Coptodera antipodum, Bates, Ent. M. Mag. iv. p. 78, New Zealand.

Mastax parreyssii (Chaud. MS.), Tournier, Ann. Soc. Ent. Fr. 4e sér. vii. p. 561, pl. 13. fig. 1, Algeria, Egypt.

Acanthogenius sculpturatus, Gerstäcker, Arch. für Naturg. xxxi. p. 14, Zanzibar.

Pheropsophus kersteni, Gerstäcker, *l. c.* p. 15, Zanzibar.

Drypta setigera, Gerstäcker, *l. c.* p. 15, Zanzibar.

Galerita procera and *G. angustipennis*, Gerstäcker, *l. c.* p. 16, Zanzibar.

Lasiocera assimilis, Gerstäcker, *l. c.* xxxi. p. 17, Zanzibar.

Tetragonoderus simplicissimus, Gerstäcker, *l. c.* p. 17, Zanzibar.

Lebia hypoxantha, Gerstäcker, *l. c.* p. 18, *L. deplanata* and *L. calycina*, Gerst. *l. c.* p. 19, Zanzibar.

Anthiides.

Anthia duparqueti, sp. n., Lucas, Bull. Soc. Ent. Fr. 1867, p. xciii, Cape Negro.

Anthia hexasticta, sp. n., Gerstäcker, Arch. für Naturg. xxxi. p. 10, and *A. cavernosa*, sp. n., Gerst. *l. c.* p. 11, Zanzibar.

Polyhirma. Gerstäcker (*l. c.*) describes the following new species from Zanzibar:—*P. spatulata*, p. 11; *P. bihamata*, p. 12; *P. lagenula* and *quadriplagiata*, p. 13.

Graphipterus rolphii, sp. n., Fairmaire, Ann. Soc. Ent. Fr. 4e sér. vii. p. 390, Morocco.

Scaritides.

Putzeys has published (Ann. Soc. Ent. Belg. x. pp. 1–242) a revision of the genera and species of this group, with the exception of those forming his sections *Pasimachides* and *Scaritides*. He remarks upon the distinctive characters of the six sections into which he divides the group, but describes a new species of *Molobrus*, belonging to the first of the above-named sections, and characterizes the genus *Passalidius* (Chaud.), which, with *Acanthoscelis*, he places between his *Scaritides* and *Scaptérides*. His genus *Bohemannia* he regards as following the *Scaptérides*. The whole of the described species of the four sections (*Scaptérides*, *Oxystomides*, *Clivinides*, and *Ardistomides*) here treated of are enumerated, and in most cases characterized with more or less detail. The new species described are numerous, and several new genera are characterized.

New genera :—

Thlibops, g. n., Putzeys, *l. c.* p. 9. Allied to *Scapterus*; paraglossæ broad at apex; last joint of labial palpi twice as long as penultimate; joint 2 of max. palpi very stout; clypeus with a large tooth on each side. Sp. *T. dohrni* and *crenatus* (Chaud.) and *longicollis* (Putz.).

Camptidius, g. n., Putzeys, *l. c.* p. 22. Allied to *Camptodontus*; antennæ moniliform from joint 5; penultimate joint of max. palpi shorter than the last; anterior tibiæ with long teeth. Sp. *C. ophthalmicus*, sp. n., Putz. *l. c.* p. 22, Amazons.

Sparostes, g. n., Putzeys, *l. c.* p. 27. Allied to *Cryptomma*; joints 2–4 of max. palpi nearly equal in length; clypeus truncate; eyes rather prominent. Sp. *S. brevicollis*, sp. n., Putz. *l. c.* p. 27, North China; *S. striatulus*, sp. n., Putz. *l. c.* p. 29, Siam.

Nyctosyles, g. n., Putzeys, *l. c.* p. 30. Allied to *Dyschirius*; tooth of mentum broad, subrotundate at apex, lateral lobes rounded; ligula truncate; paraglossæ acuminate; prothorax margined at base. Sp. *D. quadraticollis* and *planicollis* (Reiche); *N. laticollis* (Dej.), Putz. *l. c.* p. 31, Cayenne and Amazons.

Brachypelus, g. n., Putzeys, *l. c.* p. 31. Allied to *Dyschirius*; lateral lobes of mentum angulated; ligula subacuminate; labial palpi with last joint ovate, acuminate at apex, half the length of the penultimate; joint 3 of max. palpi minute; prothorax margined at base. Sp. *B. obesus*, sp. n., Putz. *l. c.* p. 31, Madagascar.

Oxydrepanus, g. n. (Chaud. MS.), Putzeys, *l. c.* p. 103. Allied to *Dyschirius*; last joint of palpi produced into a long point; anterior tarsi with joint 1 as long as the rest together and joint 2 as long as 3 and 4 together. Sp. *D. rufus* (Putz.); *O. luridus*, Putz. *l. c.* p. 104, Surinam; *O. micans* (Dohrn, MS.), Putz. *l. c.* p. 105, Surinam; *O. minimus*, Putz. ibid., Santarem; *O. brasiliensis* (Sahlb. MS.), Putz. ibid., Brazil; *O. ovalis*, Putz. *l. c.* p. 106, New Granada; *O. mexicanus* (Chaud. MS.), Putz. ibid., Mexico.

Coryza, g. n., Putzeys, *l. c.* p. 194. Allied to *Clivina*; palpi short, joint 2 of maxillaries stouter than the rest; joints 2–4 of antennæ elongate, triangular; pronotum rounded; elytra oblong; intermediate tibiæ not spurred; joint 1 of tarsi clavate, as long as the rest together, 2–4 transverse. Sp. *C. maculata* (Nietn.); *C. nietneri*, sp. n., Putz. *l. c.* p. 196, India (=*maculata*, Putz. *olim*); and *C. carinicceps*, sp. n. (Chaud. MS.), Putz. ibid., North India.

Ancus, g. n., Putzeys, *l. c.* p. 197. Allied to *Clivina*; central tooth of mentum small; joint 2 of max. palpi oval, much inflated; antennæ short, joint 2 longer than 3; pronotum quadrate, with a large punctured impression on each side; elytra cylindrical; anterior tibiæ strongly digitate, intermediate with a strong spur; joint 1 of tarsi longer than 2–4 united. Sp. *C. bicornuta* (Putz.); *A. sulcicollis, depressifrons*, and *heteromorphus*, sp. n., Putz. *l. c.* p. 198, Amazons; and *A. excavaticeps*, sp. n. (Chaud. MS.), Putz. *l. c.* p. 199, Siam.

Holoprizus, g. n., Putzeys, *l. c.* p. 232. Allied to *Schizogenius*; lateral lobes of mentum narrow, acutely ovate; last joint of palpi acute, joint 3 of maxillaries short; antennæ moniliform from joint 6, joint 2 twice as long as 3; joint 1 of tarsi very long, clavate. Sp. *H. serratus*, sp. n., Putz. *l. c.* p. 233, Amazons.

New species :—

Molobrus rodriguezi, Putzeys, *l. c.* p. 4, Guatemala.

Listropus iridescens, Putzeys, *l. c.* p. 11, Amazons; *L. micans* (Chaud. MS.), Putz. *l. c.* p. 12, Brazil.

Stratiotes batesi (Chaud. MS.), Putzeys, *l. c.* p. 13, *S. minor*, Putz. *l. c.* p. 14, *S. sulcicollis*, Putz. ibid., and *S. sulculatus*, Putz. *l. c.* p. 15, Amazons.

Camptodontus. Of this genus Putzeys (*l. c.*) describes the following new species :—*C. longicollis*, p. 16, *C. longipennis*, p. 17, *C. forcipatus*, p. 18, and *C. amazonum*, p. 21, from the Amazons; *C. obliteratus*, p. 19, Surinam; *C. crenatus*, p. 20, Pampas; and *C. interstitialis*, p. 21, Brazil.

Scolyptus affinis (Chaud. MS.), Putzeys, *l. c.* p. 24, and *S. rorax*, Putz. ibid., from the White Nile; *S. crassicollis*, Putz. *l. c.* p. 25, origin not stated.

Climax serratipennis, Putzeys, *l. c.* p. 29, Amazons.

Dyschirius. Of this genus Putzeys (*l. c.*) describes the following new species :—(Subg. Reichenia, Saulcy) *R. subterranea*, p. 40, Algeria: (subg. Dyschirius) *D. melancholicus*, p. 41, Dauria; *D. acutus*, p. 48, Tarsous; *D. planiusculus*, p. 50, Mexico; *D. morio*, p. 52, Georgia; *D. schaumii*, p. 55, Egypt; *D. longipennis*, p. 55, Algeria; *D. protensus*, p. 57, Hyères; *D. peyroni*, p. 58, Tarsous; *D. clypeatus*, p. 59, Sicily; *D. nanus*, p. 60, Odessa; *D. ovipennis* (Chaud. MS.), p. 68, Olonne; *D. crenulatus*, p. 70, Kasan; *D. attenuatus*, p. 71, Algeria; *D. fossifrons* (Chaud. MS.), Kiachta; *D. caspius* (Motsch. MS.), p. 78, Caspian; *D. dentipes*, p. 80, Algeria; *D. remotepunctatus*, p. 83, Holland; *D. angusticollis*, p. 83, Algeria; *D. frontalis*, p. 86, Al-

geria; *D. recurvus*, p. 87, south of Russia; *D. syriacus*, ibid., Syria; *D. indicus*, p. 91, North India; *D. orientalis*, p. 92, Hong Kong; *D. exaratus* (Schaum, MS.), p. 96, Egypt; *D. interpunctatus*, p. 97, North India; *D. hispidulus*, p. 98, Siam; *D. minarum*, ibid., Minas-Geraës; *D. pampicola*, p. 99, Pampas; *D. tournieri*, p. 234, Jura (at 6400 feet).

Dyschirius auriculatus, Wollaston, Col. Hesp. p. 7, Cape Verde Islands.

Clivina. Putzeys (*l. c.*) describes the following new species of this genus:—*C. calida*, p. 109, from the White Nile; *C. westwoodi* (= *C. castanea*, Putz. *olim*), p. 109, East Indies; *C. sulcigera* (Chaud. MS.), p. 110, Siam; *C. transcaucasica*, p. 113; *C. euphratica*, p. 117; *C. sculptilis*, p. 119, Natal; *C. hydropica*, p. 121, North India; *C. angularis*, p. 122, East Indies; *C. capitata* (Chaud. MS.), ibid., East Indies; *C. divaricata*, ibid., Deccan; *C. advena*, p. 123, East Indies; *C. siamica*, p. 124, Siam; *C. transversa*, p. 125, Siam; *C. brevior*, p. 126, Rangoon; *C. helferi*, ibid., India; *C. wallacei*, p. 127, Celebes; *C. goniostoma*, p. 128, Egypt; *C. lacustris*, p. 129, Lake N'Gami; *C. consobrina*, p. 130, Senegal; *C. lata*, p. 131, Rangoon; *C. agona*, ibid., Siam; *C. marginicollis*, p. 133, origin not stated; *C. placida*, p. 134, Celebes; *C. stigmatica*, ibid., Celebes; *C. erythropyga* (Schaum, MS.), p. 135, Assouam; *C. ludoviciana* (Chaud. MS.), p. 138, Louisiana; *C. planulata*, p. 140, Mexico; *C. quadrata*, p. 141, Columbia; *C. taurina*, p. 146, Rio Negro; *C. recurvidens* (Chaud. MS.), p. 149, Brazil; *C. fossifrons*, ibid., Bahia; *C. lucida*, p. 150, Mexico; *C. distigma* (Chaud. MS.), Mexico; *C. inæqualis*, ibid., Amazons; *C. bicolor*, p. 152, Pampas; *C. cruciata* (Chaud. MS.), ibid., Mexico; *C. maculatis*, p. 153, Santa Fé; *C. latiuscula*, p. 154, Amazons; *C. breviuscula*, ibid., Montevideo; *C. sulcipennis*, p. 156, United States; *C. torrida*, ibid., Amazons; *C. biguttata* (Chaud. MS.), p. 157, Cuba and Louisiana; *C. brevicollis*, p. 158, origin unknown (American); *C. transversicollis*, p. 159, Bahia; *C. bituberculata* (Chaud. MS.), p. 161, Mexico; *C. burmeisteri*, ibid., La Plata; *C. dilutipennis* (Chaud. MS.), p. 162, Mexico; *C. obscuripennis*, p. 163, Caraccas; *C. punctifrons* (Chaud. MS.), p. 164, Brazil; *C. læta*, p. 165, Montevideo; *C. pampicola*, p. 166, Pampas; *C. lætipes*, p. 168, Minas Geraës; *C. oblita* (Chaud. MS.), ibid., New Granada; *C. tridentata*, ibid., Surinam; *C. nitidula*, p. 169, Montevideo; *C. batesi*, ibid., Amazons; *C. stygica*, p. 170, Amazons; *C. adstricta*, p. 171, Mexico; *C. cruralis*, p. 172, Amazons; *C. spinipes*, p. 174, Guatemala; *C. carbonaria*, ibid., Bolivia; *C. parvidens* (Chaud. MS.), ibid., Mexico; *C. platensis*, p. 175, *C. vespertina*, p. 176, and *C. parvula*, ibid., Montevideo; *C. punctiventris*, p. 177, Amazons; *C. antennaria*, ibid., Brazil and Cayenne; *C. puncticollis*, p. 178, Amazons; *C. microdon*, p. 183, Melbourne; *C. obliquata*, p. 188, South Australia; *C. angustula* (Chaud. MS.), p. 190, Melbourne; *C. deplanata*, ibid., Melbourne; *C. biplagiata*, p. 191, Australia.

Ardistomis. Of this genus Putzeys (*l. c.*) describes the following new species:—*A. profundestriata*, p. 201, Amazons; *A. convexa* (Chaud. MS.), p. 202, Mexico; *A. atripennis*, ibid., Guadeloupe; *A. posticalis*, p. 203, Amazons; *A. brevis*, p. 204, Amazons; *A. arechavaletæ*, ibid., Montevideo; *A. curta*, p. 205, Saint Catherine; *A. rotundipennis*, p. 206, Central America; *A. venustula*, p. 207, Amazons; *A. hæmorrhœa* (Chaud. MS.), ibid., Minas Geraës; *A. elongatula*, p. 208, Cuba; *A. batesi*, p. 209, Amazons; *A. rugosa*, p. 210, Saint Catherine; *A. striga* (Motsch. MS.), p. 211, Panama; *A. ænea*, p. 212, Minas Geraës; *A. glabrata*, p. 213, Montevideo; *A. propinqua*, p. 214, Mexico.

Aspidoglossa. The following new species of this genus are described by Putzeys (*l. c.*):—*A. ruficollis* (Chaud. MS.), p. 215, Amazons; *A. latiuscula*, (Pu-17, Minas Geraës; *A. distincta* (Chaud. MS.), ibid., Yucatan (=*mexi-*See *a*, Putz. Mon.); *A. agnata* (Chaud. MS.), p. 218, Amazons; *A. curta* 182 (Chaud. MS.), p. 220, Nicaragua; *A. collaris*, p. 221, Minas Geraës.

Schizogenius. Of this genus Putzeys describes (*l. c.*) the following new species:—*S. truquii*, p. 224, Mexico; *S. quadripunctatus*, p. 225, Parana; *S. arechavaletæ*, p. 227, Montevideo; *S. sallei*, p. 228, Texas; *S. sellatus*, ibid., Caraccas; *S. clivinoides*, p. 229, Pampas; *S. basalis*, p. 230, Montevideo; *S. angusticollis*, p. 231, Montevideo.

Chlæniides.

Peydrus piceus (Lec.). Habits noticed by Horn (Proc. Ent. Soc. Phil. vi. p. 290). This insect emits a fluid from the anus, with a slight explosion.

Loricera pilicornis (Fab.). Gernet describes and figures the larva of this species, Horæ Soc. Ent. Ross. v. p. 10, pl. 1. fig. 2.

Metaglymma, g. n., Bates, Ent. M. Mag. iv. p. 78. Allied to *Broscus*; tooth of mentum bifid at apex; paraglossæ horny and adherent; penultimate joint of max. palpi short; elytra punctate-sulcate; tibiæ with projecting apical teeth; mesothoracic epimera very wide. Sp. *M. monilifer*, sp. n., Bates, *l. c.* p. 79, New Zealand.

Chlænius pretiosus (Rosenh.) is not a *Dinodes*. Seidlitz, Berl. ent. Zeits. 1867, p. 431.

Chlænius uncosignatus, sp. n., Wollaston, Col. Hesp. p. 18, and *C. consanguineus*, sp. n., Woll. *l. c.* p. 20, Cape Verde Islands.

Chlænius soricinus, sp. n., Gerstäcker, Arch. f. Naturg. xxxi. p. 21, Zanzibar.

Oodes lucidus, sp.n., Gerstäcker, *l. c.* p. 21, Zanzibar.

Broscus insularis, sp. n., Piochard de la Brûlerie, Bull. Soc. Ent. Fr. 1867, p. lxxix, Majorca.

Craspedophorus eustalactus, sp. n., Gerstäcker, *l. c.* p. 20, Zanzibar.

Harpalides.

Wollaston (Col. Hesp. p. 13, note) remarks that, in his opinion, *Amblystomus* belongs to the Brachinides, its alliance being with *Metabletus* and *Blechrus*.

Schiödte (Naturh. Tidsskr. 3rd ser. iv. p. 168) notices the occurrence of three Danish species of this group, namely, *Anisodactylus pseudoæneus*, *Diachromus germanus*, and *Stenolophus anglicus*.

New species :—

Anisodactylus (*Anisotarsus*?) *amplicollis*, Gerstäcker, Arch. für Naturg. xxxi. p. 22, Zanzibar.

Hypolithus pavoninus and *H. aruschensis*, Gerstäcker, *l. c.* p. 23, Zanzibar.

Harpalus cratognathoides, Gerstäcker, *l. c.* p. 24, Zanzibar.

Harpalus paivanus, Wollaston, Col. Hesp. p. 23, and *H. serienotatus*, Woll. *l. c.* p. 24, Cape Verde Islands.

Dichirotrichus? *lineatopictus*, Wollaston, *l. c.* p. 25, S. Iago (Cape Verdes).

Acinopus pilipes, Piochard de la Brûlerie, Bull. Soc. Ent. Fr. 1867, p. lxxix, Majorca.

Stenolophus (*Acupalpus*) *cantabricus*, Pioch. de la Brûl. *l. c.* p. lxxx, Spain.

Stenolophus subrelucens, Wollaston, *l. c.* p. 26, Cape Verde Islands.

Feroniides.

Putzeys has published (Mém. Soc. Roy. Liége, 2e sér. iv. pp. 171–283) an important paper on the species of Amaroid Carabidæ in the collection of Baron Chaudoir. Of this a preliminary abstract was published by him in 1865 (see Record, 1865, pp. 404 & 421); and the table of genera there given is reproduced in the extended memoir. The total number of species here cited is 177, of which 44 are new:—

Amara prætermissa (Sahlb.) = *similata* (Gyll.); *A. subconvexa* (Putz.) is described, p. 177; *A. obsoleta* (Dej.) and *adamantina* (Kolen.) = *ovata* (Fab.); *A. assimilis* (Chaud.) = *vulgaris* (Panz.); *A. persica* (Chaud.) = *trivialis* (Gyll.); *A. perplexa* (Dej.) = var. *familiaris* (Duft.); *Celia ruficornis* (Dej.) = *ingenua* (Duft.); *C. fusca* (Dej.) and *cursitans* (Zimm.) are regarded as distinct, and their characters indicated (*l. c.* p. 187); *C. modesta* (Dej.) = *municipalis* (Duft.), to which also belong *A. obscuricornis* and *C. viridescens* and *ruthenica* (Motsch.); *A. inæqualis* (Kirby) = *C. interstitialis* or *patruelis* (Dej.); *C. microcephala* (Motsch.) probably = *rupicola* (Zimm.); *C. monticola* (Zimm.) = *quenselii* (Schönh.); *C. remota* (Zimm.) and *indistincta* (Mann.) = *remotestriata* (Dej.), as also probably *C. gibba* (Lec.); *C. contempta* (Lec.) = *musculus* (Say); *C. granaria* (Dej.) = *infima* (Duft.); *A. lapponica* (Dej.) = *Acrodon brunneus* (Duft.); *Leiocnemis* (Zimm.) is a heterogeneous assemblage. Of the 12 species enumerated by him the author separates 5 to form a new genus intermediate between *Leiocnemis* and *Curtonotus*, under the name of *Leirides* (see Record, 1865, p. 422). Of the remainder, *L. elongata* (Sturm.) = *sabulosa* (Dej.), leaving 6 of Zimmermann's species in the genus, to which Putzeys adds 21 (12 new, including those described in 1865); *L. polita* (Chaud.) and *barnevillii* (Fairm.) = *sabulosa* (Dej.); *A. confinis* (Dej.) = *avida* (Say); *A. corsica* (Reiche) = *montana* (Dej.); *Curtonotus altaicus* (Motsch.) = *fodinæ* (Mann.); *C. caucasicus* (Motsch.) = *aulicus* (Panz.); *C. uralensis* (Motsch.) = *gebleri* (Dej.); *Leirus volgensis* (Chaud.) = *Curt. desertus* (Krin.); *C. dauricus* (Motsch.) = *torridus* (Ill.); *L. borealis* (Chaud.) = *brunnipennis* (Dej.); *L. longicollis* (Motsch.) = *hyperboreus* (Dej.). This paper is concluded by an alphabetical list of the described Amaroid Carabidæ.

Putzeys (Stett. ent. Zeit. 1867, pp. 169–178) remarks on some species belonging to the group of the *Amarides*, namely, *Leiocnemis fervida* (Coq.), *L. montana* (Dej.), and *Leirides alpicola* (Dej.). He also gives a description of *Celia harpalina* (Lec.) and tables of the known species of *Celia* and *Leiocnemis*. Some new species are also described.

Calathus. Gautier des Cottes, in his monograph of the European and Mediterranean species of this genus (Mitth. schw. ent. Ges. ii. pp. 235–286), describes in all 50 species; but as some of these are referred in a note as synonyms to other species (*vide infrà*), the total number admitted by him at the close of his work is 47. The following notes may be given from his synonymy:—*C. octoseriatus* (Gaut.) = *ovalis* (Dej.); *C. cisteloides* (Ill.) = *latus* (Linn.); *C. latus* (Curt.) = *punctipennis* (Germ.); *C. minutus* (Gaut.) = *luctuosus* (Dej.); *C. uniseriatus* (Vuillefr.) = *angularis* (Chevr.); *C. ambiguus* (Payk.) includes *fuscus* (Fab. &c.), *rufipes* (Fab.)?, *tardus* (Fab.)?, *rufangulus* (Marsh. &c), and *dilutus* (Chaud.); *C. thoracicus* (Dej.) = *soliexi* (Bossi); *C. distinguendus* (Chaud.) and *C. lugens* (Vuillefr.) = *latus* (Linn.); *C. angustatus*

(Ramb.) probably=*fulvipes* (Gyll.); *C. asturiensis* and *liotrachelus* (Vuillefr.) =*fulvipes* (Gyll.); *C. depressus* (Gaut.) and *grenatensis* (Vuillefr.)=*ambiguus* (Payk.); *C. rotundicollis* (Dej.) and *rotundatus* (J. Duv.)=*piceus* (Marsh.). See also notes on various species of the genus by the same author (*l.c.* pp. 163–169 and 187–193).

Fairmaire (Ann. Soc. Ent. Fr. 4e sér. vii. p. 389) records *Pseudotrechus mutilatus* (Rosenh.) as an inhabitant of Morocco. The same author (*l. c.* p. 391) gives a list of the known species of *Amara* found in Algeria.

Letzner (Jahresber. schles. Ges. vaterl. Cultur, xliv. p. 169) briefly notices the results of an excursion to the Riesengebirge, referring chiefly to Carabideous Beetles, and particularly to *Anchomenus ericeti* (Panz.), which he found in considerable numbers, and of which he here indicates numerous colour-varieties.

Perty (Mitth. naturf. Ges. in Bern, 1867) describes an example of *Molops terricola* (Fab.) with the left elytron stunted and altered in sculpture (p. 304), and one of *Percosia patricia* (Creutz.), with the right antennæ much abbreviated, and having only one misshapen piece in place of the last 9 joints (p. 306).

Perty (Mitth. naturf. Ges. in Bern, 1867, p. 307, fig. 5) describes and figures a monstrous specimen of *Calathus fulvipes*, having the right anterior tibia short, with an indication of a fissure, and bearing three tarsi.

H. Fuss notices an example of *Amara consularis* with a double claw-joint. Berl. ent. Zeit. 1867, p. 407.

Sphodrus leucophthalmus. Larva described and figured by Gernet (Horæ Soc. Ent. Ross. v. p. 12, pl. 1. fig. 3).

A. Skácel notices the injury done to wheat by the larva of *Zabrus gibbus* (Verh. naturf. Ver. in Brünn, v. Sitzungsb. p. 31). See also Künstler, Verh. zool.-bot. Ges. in Wien, xvii. pp. 915–922.

Crotch (Proc. Zool. Soc. 1867, p. 385) describes *Anchomenus aptinoides* (Tarn.), from the Azores.

New genera :—

Morphnos, g. n., Schaufuss, Col. Hefte, i. p. 65. Allied to *Æchmites*; tooth of mentum emarginate in the middle; head large; last joint of palpi subcylindric; posterior trochanters recurvo-acuminate; tarsi in both sexes (?) naked; claws simple.—Sp. *M. antipodus*, sp. n., Schauf. ibid., from South Australia.

Sphallax, g. n., Bates, Ent. M. Mag. iv. p. 55. Alliance doubtful; Bates regards it as probably the type of a new subfamily; head and thorax narrow, head ovate, thorax cordate; mandibles moderate, curved, acute; mentum with a bifid tooth, lateral lobes spined; ligula elongate, lanceolate, detached from paraglossæ; palpi short, last joints longer than penultimates, obtusely pointed; joint 2 of antennæ minute, 3 longest; tibiæ sulcate above and beneath, anterior deeply notched; anterior tarsi in ♂ with 3 dilated, triangular joints, with a dense brush of hairs beneath.—Sp. *S. peryphoides*, sp. n., Bates, *l. c.* p. 56, New Zealand.

Zabroscelis, g. n., Putzeys, Mém. Soc. Roy. Liége, 2e sér. i. p. 268. Allied to *Zabrus*; posterior tibiæ in ♂ pubescent within; prosternum in ♀ (?) with an oval pit.—Sp. *Z. ditomoides*, sp. n., Putz. *l. c.* p. 269, Cyprus.

New species :—

Feronia puncticeps, C. G. Thomson, Skand. Col. ix. p. 35, and *F. pauciseta*, Thoms. *l. c.* p. 36 (=*F. cuprea*, tom. i. p. 231), Scandinavia.

Feronia (*Orthomus*) *balearica*, Piochard de la Brûlerie, Bull. Soc. Ent. Fr. 1867, p. lxxx, Majorca.

Pterostichus profundecrenatus, Wollaston, Col. Hesp. p. 21, Cape Verde Islands.

Amara. The following new species of this genus are described by Putzeys (*l. c.*) :—*A. cupreolata*, p. 180, United States; *A. proxima*, p. 183 (=*intermedia*, Chaud. nec Motsch.), Georgia; *A. protensa*, p. 183, Hudson's Bay Territory; *A. sallei*, p. 185, Mexico.

Celia acutangula (Chaud. MS.), Putzeys, *l. c.* p. 194, United States. *C. texana* (Chaud. MS.), Putz. *l. c.* p. 196, Texas.

Leiocnemis. Of this genus Putzeys (*l. c.*) describes the following new species :—*L. euphratica* (Chaud. MS.), p. 202, Mesopotamia; *L. indica* (Chaud. MS.), p. 216, North India; *L. syriaca* (Chaud. MS.), ibid., Syria; *L. subdepressa*, p. 222, Caucasus; *L. planipennis*, p. 223, Caucasus.

Leiocnemis perezi, Putzeys, Stett. ent. Zeit. 1867, p. 174, Madrid; *L. collina*, Putz. *l. c.* p. 176, Bône; *L. meridionalis*, Putz. ibid., Cette.

Amara (*Leiocnemis*) *putzeisii*, Fairmaire, Ann. Soc. Ent. Fr. 4e sér. vii. p. 391, *A.* (*L.*) *chlorotica*, Fairm. *l. c.* p. 392, and *A.* (*L.*) *henonii*, Fairm. *l. c.* p. 393, from Algeria.

Amathitis subplanata, Putzeys, Mém. Soc. Roy. Liége, 2e sér. i. p. 225, Siberia; *A. songarica* (Chaud. MS.), Putz. *l. c.* p. 226, Tsungaria (=*Bradytus latus*, Motsch.); *A. cordata*, Putz. *l. c.* p. 228 (=*B. cordicollis*, Chaud.), Eastern Siberia.

Leirides, g. n., Putzeys, *l. c.* p. 228 (see Record, 1865, p. 422).—Sp. *L. helopioides* (Heer), *nobilis* (Duft.), *spectabilis* (Schaum), *cardui*, *puncticollis*, *pyrenæus*, *cuniculinus*, and *alpicola* (Dej.); and *L. calathoides*, sp. n. (Motsch. MS.), Putzeys, *l. c.* p. 229, Caucasus.

Leirides frigidus (Chaud. MS.), Putzeys, Stett. ent. Zeit. 1867, p. 177, south of France.

Curtonotus. Putzeys, Mém. Soc. Roy. Liége, 2e sér. i., describes the following new species of this genus :—*C. convexicollis* (Chaud. MS.), p. 232, Siberia; *C. nitens*, p. 234, North China; *C. fulvipes* (Chaud. MS.), p. 235, Missouri; *C. transversicollis*, p. 236, Russian America; *C. adstrictus*, p. 238, United States; *C. bistriatus* (Chaud. MS.), p. 240, Lenkoran; *C. reflexus* (Chaud. MS.), p. 241, Newfoundland; *C. contractus*, ibid., Siberia; *C. substriatus* (Reiche, MS.), p. 242, Mexico; *C. somnolentus*, p. 243, Oonalaschka; *C. castaneus* (Chaud. MS.), p. 244, Kirghise Desert; *C. holmbergi*, p. 250, Russian America; *C. striolatus*, p. 251 (=*rufimanus*, Motsch. nec Kirby), Kamtschatka; *C. caligatus* (Eschsch. MS.), p. 252, Kamtschatka; *C. cognatus*, p. 253, Norway; *C. pedestris*, p. 254, Udskoe Ochotsk; *C. tristis*, p. 255, North Canada; *C. canadensis*, p. 256, North Canada; *C. conoideus*, ibid., origin not stated; *C. dejeani*, p. 258, Kamtschatka; *C. cribratus* (Chaud. MS.), p. 259, Central Siberia.

Bradytus lævistriatus (Chaud. MS.), Putzeys, *l. c.* p. 262, United States; *B. simplicidens* (Moraw.), Putz. *l. c.* p. 264, Japan.

Percosia infuscata, Putzeys, *l. c.* p. 267, Siberia and Songaria.

Antisphodrus obtusangulus, Schaufuss, Col. Hefte, i. p. 66, Mount Ararat.

Calathus algiricus (Reiche), Gautier des Cottes, Mitth. schw. ent. Ges. ii. p. 164, Algeria; *C. syriacus* (Reiche), Gaut. des Cottes, *l. c.* p. 165, Syria; *C. numidicus* (Reiche), Gaut. des Cottes, *l. c.* p. 167, Algeria; *C. hispanicus* (Chevr.), Gaut. des Cottes, *l. c.* p. 168, Spain; *C. bipunctatus* (Chaud.), Gaut. des Cottes, *l. c.* 188, Galicia; *C. chevrolatii*, Gaut. des Cottes, *l. c.* p. 189, Spain and Switzerland. [Of these species *hispanicus* is subsequently (p. 282) referred by the author to *baticus* (Ramb.), *bipunctatus* to *fulvipes* (Gyll.), and *chevrolatii* (p. 283) to *ambiguus* (Payk.).] In his "Monograph of the genus *Calathus*," Gautier des Cottes further describes the following as new species:—*C. tappesi*, *l. c.* p. 261, Madrid; *C. lævicollis* (Chaud.), *l. c.* p. 266, origin not stated; *C. atticus*, *l. c.* p. 269, Greece; *C. bellieri*, *l. c.* p. 284, Florence; and *C. vuillefroyi*, *l. c.* p. 285, Spain.

Bembidiides.

Tachys atomarius, sp. n., Wollaston, Col. Hesp. p. 28, Cape Verde Islands.

Bembidium hesperidum, sp. n., Wollaston, *l. c.* p. 31, Cape Verde Islands.

Bembidium hesperus, sp. n., Crotch, Proc. Zool. Soc. 1867, p. 385, Azores.

Bembidium unistriatum, sp. n., Bilimek, Verh. zool.-bot. Ges. in Wien, xvii. p. 902, Cave of Cacahuamilpa in Mexico.

Bembidium ibericum, sp. n., Piochard de la Brûlerie, Bull. Soc. Ent. Fr. 1867, p. lxxx, Spain.

Bembidium (*Peryphus*) *maorinum*, sp. n., Bates, Ent. M. Mag. iv. p. 56, and *B.* (*P.*) *charile*, Bates, *l. c.* p. 79, New Zealand.

Pseudomorphides.

G. H. Horn (Trans. Amer. Ent. Soc. i. p. 153), after discussing the position of this group (see p. 225), gives the following Table of the 5 genera which he refers to it:—

I. Head horizontal; mouth anterior; antennæ filiform.
  A. Without antennal grooves ..... Pseudomorpha.
  B. With antennal grooves.
    1. Mentum entire; ventral segments 4 .... Hydroporomorpha.
    2. Mentum emarginate; ventral segments 6.
      a. Posterior angles of prothorax distinct .. Sphallomorpha.
      b. Posterior angles of prothorax rounded .. Silphomorpha.
II. Head deflexed, front very convex; mouth inferior; antennæ clavate. Adelotopus.

Pseudomorpha cronkhitei, sp. n., Horn, *l. c.* p. 151, from California.

Amphizoides.

Amphizoa insolens (Lec.). G. H. Horn (Proc. Ent. Soc. Phil. vi. pp. 289–290) describes the habits of this species, which he says is as strictly subaquatic as any of the Parnidæ. It lives especially in stony creeks, and crowded together upon the stones in some numbers. The insects run badly on dry land, but move readily under water even in strong currents; they are almost unable to swim. Horn remarks on the resemblance between *Amphizoa* and the Tenebrionid genus *Nyctopetus*.

G. H. Horn (Trans. Amer. Ent. Soc. i. pp. 154–158) describes the structure of *Amphizoa insolens* (Lec.) in great detail, and illustrates his description with good outline woodcuts of the insect and its various parts. Horn's opinion as to its systematic position has already been indicated (see p. 225).

Dytiscidæ.

The German species of this family are described in the part of the 'Naturgeschichte der Insecten Deutschlands' published at the end of 1867. This portion was very nearly completed by the late Professor Schaum before he was seized by his last illness; it has been completed by Kiesenwetter. The arrangement is that adopted by Erichson in his 'Käfer der Mark Brandenburg.'

Reiche calls attention to the presence, in most females of *Dytiscus latissimus*, of a membranous lamina, covering the last two abdominal segments. He supposes that the individuals thus furnished have not laid their eggs. Bull. Soc. Ent. Fr. 1867, p. iii. (See also under *Papilionides*.) See also a further note by F. de Sauley, *l. c.* p. x.

Aubé discusses (Ann. Soc. Ent. Fr. 4e sér. vii. pp. 256–258) the characters and synonymy of *Hydroporus opatrinus* (Germ.) and its allies, which he settles as follows:—1. *H. opatrinus* (Germ.), incl. *hispanicus* (Rosenh.), *lareyniei* (Fairm.), and *coarcticollis* (Reiche); 2. *H. mœstus* (Fairm.) = *opatrinus* (Aubé & Fairm. et Laboulb.); and 3. *H. vestitus* (Fairm.).

Murray remarks that his *Agabus hydroporoides* is a *Celina*. He gives a list of 6 known species of the genus. Ann. & Mag. N. H. 3rd ser. xix. p. 179.

Haliplus lineolatus? (Mann.). Larva described and figured by Gernet (Horæ Soc. Ent. Ross. v. p. 16, pl. 2. fig. 4).

Agabus uliginosus. Perty (Mitth. naturf. Ges. in Bern, 1867, p. 307 and fig. 5) describes and figures an example having the right hind tibia singularly deformed, and bearing two tarsi.

Oxynoptilus, g. n., Schaum, Nat. Ins. Deutchl. i. 2. p. 22. Allied to *Hyphydrus*; posterior tarsi with equal moveable claws; prosternum dilated at apex, metasternum broad in front; intermediate legs very distant; elytra cuspidate at apex. Sp. *H. cuspidatus* (Kunze).

New species:—

Agabus godmanni, Crotch, Proc. Zool. Soc. 1867, p. 385, pl. 23. fig. 3, Azores.

Hydroporus glabellus, C. G. Thomson, Skand. Col. ix. p. 80, Scandinavia.

Hydroporus fuscipennis, Schaum, *l. c.* p. 64 = *H. piceus* (Sturm *nec* Steph.) = *puberulus* (Mann.); *H. kraatzii*, Schaum, *l. c.* p. 66.

Hydaticus punctipennis, C. G. Thomson, *l. c.* p. 87, and *H. levipennis*, Thoms. *l. c.* p. 88 (= *H. transversalis*, auct.), Scandinavia.

Eriglenus unguicularis, C. G. Thomson, *l. c.* p. 101, Ringsjön and Lund.

Gaurodytes clypealis, C. G. Thomson, *l. c.* p. 107, Scania; *G. biguttulus*, Thoms. *l. c.* p. 110, North Scandinavia.

Laccophilus vermiculosus, Gerstäcker, Arch. f. Naturg. xxxi. p. 25, Zanzibar.

Hyphydrus crassus, Wollaston, Col. Hesp. p. 33, Cape Verde Islands.

Copelatus formosus, Wollaston, *l. c.* p. 34, Cape Verde Islands (S. Iago).

Haliplus schaumii, Solsky, Horæ Soc. Ent. Ross. v. p. 29, Koslow (East Russia).

Gyrinidæ.

The German species of this family are described by Kiesenwetter (Nat. Ins. Deutschl. i. 2. pp. 127–144).

Orectochilus schistaceus, sp. n., Gerstäcker, Arch. f. Naturg. xxxi. p. 25, Zanzibar.

Palpicornia.

Wollaston (Col. Hesp. p. 40, note) remarks upon the characters of *Berosus*, in which he says the antennæ are only 7-jointed; he also regards *Sternolophus* (Sol.) as only a section of *Hydrous* (*l. c.* p. 46, note).

An example of *Sphæridium hæmorrhoum* (Gyll.), with the thorax half the usual length and abrupt in front, is described by Perty, Mitth. naturf. Ges. in Bern, 1867, p. 306.

Paracymus, g. n., C. G. Thomson, Skand. Col. ix. p. 120. Allied to *Hydrobius*; posterior femora smooth; prosternum with an elevated median line; sutural stria of elytra abbreviated anteriorly. Sp. *Hydr. æneus* (Germ.).

Hydroxenus, g. n., Wollaston, Col. Hesp. p. 40. Allied to *Laccobius* and *Berosus*; antennæ 7-jointed (as in *Berosus* according to Wollaston); tibiæ robust, setulose externally, posterior subarcuate. Sp. *H. subpictus*, sp. n., Woll. *l. c.* p. 41, and *H. minor*, sp. n., Woll. *l. c.* p. 42, Cape Verde Islands (S. Iago).

New species :—

Hydrobius phalacroides, Wollaston, *l. c.* p. 47, Cape Verde Islands.

Cercyon fimicola, Wollaston, *l. c.* p. 48, and *C. putricola*, Woll. *l. c.* p. 49, Cape Verde Islands.

Cercyon figuratum, Gerstäcker, Arch. f. Naturg. xxxi. p. 26, Zanzibar.

Cryptopleurum sulcatum, Wollaston, *l. c.* p. 49, Cape Verde Islands.

Cryptopleurum vaucherii, Tournier, Ann. Soc. Ent. Fr. 4e sér. vii. p. 506, Geneva.

Staphylinidæ.

Stein records the discovery in Brazil by Hensel of a small species of this family which lives upon the skin of living opossums, running to and fro with great agility, in the manner of the *Nycteribiæ*. Berl. ent. Zeitsch. 1867, p. 211.

Aleocharides.

Zonoptilus (Motsch.). This genus is characterized in detail by Solsky (Horæ Soc. Ent. Ross. iv. p. 85), who also fully describes the species *Z. pennifer* (Motsch.), *l. c.* p. 86, and a new species, and characterizes *Coprophilus sellula* (Schm.), which he refers to the same genus.

Fairmaire redescribes *Myrmedonia festiva* (Saulcy) and *Proteinus olivieri* (Saulcy), from Bone in Algeria. Ann. Soc. Ent. Fr. 4e sér. vii. pp. 393, 394.

Abeille de Perrin remarks (Ann. Soc. Ent. Fr. 4e sér. vii. p. 69) that the *Myrmedonia aptera* (Peyr.), recorded in the catalogues of European Coleoptera, is founded on the first word in Peyron's description of *M. erichsonii*!

Rye (Ent. M. Mag. iii. p. 189) affirms the identity of *Thiasophila inquilina* (Märk.) with *Eurynsa kirbii* (Jans.), and notices the habit of the insects.

Myrmedonia plicata (Erichs.). Its occurrence in Britain noticed by Janson, Proc. Ent. Soc. 1868, p. 125.

New genera :—

Nematoscelis, g. n., Wollaston, Col. Hesp. p. 231. Allied to *Oligota*; paraglossæ 0; last joint of max. palpi scarcely shorter than penultimate; legs

elongate, slender, joint 1 of posterior tarsi elongate. Sp. *N. filipes*, sp. n., Woll. *l. c.* p. 232, Cape Verde Islands.

Ityocara, g. n., C. G. Thomson, Skand. Col. ix. p. 239. Allied to *Ilyobates* and *Calodera*; segment 5 of abdomen without a transverse impression; cheeks margined. Sp. *Cal. rubens* (Erichs.).

Bæoglena, g. n., C. G. Thomson, *l. c.* p. 248. Allied to *Bessopora*; abdomen narrowed to apex, with black setæ; max. palpi long, penultimate joint linear, more than twice as long as scape of antennæ. Sp. *Oxypoda præcox* (Erichs.).

New species :—

Leptusa. Scriba (Col. Hefte, i.) describes 5 new species of this genus, namely :—*L. rugosipennis*, p. 68, Tuscan Apennines; *L. pallida*, p. 69, *L. lævigata*, p. 70, and *L. nigra*, ibid., La Preste in the Pyrenées orientales; and *L. brucki*, p. 71, Tuscan Apennines.

Gyrophæna poweri, G. R. Crotch, Trans. Ent. Soc. Lond. 3rd ser. v. p. 430, near London.

Gyrophæna bihamata, C. G. Thomson, *l. c.* p. 230, and *G. puncticollis*, Thoms., *l. c.* p. 232, Scania.

Autalia puncticollis, C. G. Thomson, Skand. Col. ix. p. 204, Scandinavia.

Baryodma succicola, C. G. Thomson, *l. c.* p. 216, Lund.

Homalota subputrescens, Wollaston, Col. Hesp. p. 223, *H. exsecrabilis*, Woll. *l. c.* p. 225, *H. glarcosa*, Woll. *l. c.* p. 226, and *H. carbunculus*, Woll. ibid., Cape Verde Islands.

Homalota appulsa, Scriba, Berl. ent. Zeitschr. 1867, p. 389, and *H. eichhoffi*, Scriba, *l. c.* p. 390, Germany.

Oxypoda hydropathica, Wollaston, *l. c.* p. 227, Cape Verde Islands.

Oxypoda metatarsalis, C. G. Thomson, *l. c.* p. 246, Malmö.

Ocyusa longitarsis, C. G. Thomson, *l. c.* p. 242, Scania.

Oligota contempta, Wollaston, *l. c.* p. 231, Cape Verde Islands.

Aleochara comma, Wollaston, *l. c.* p. 229, and *A. 4-punctata*, Woll. *l. c.* p. 230, Cape Verde Islands.

Xenomma melanocephala, Crotch, Proc. Zool. Soc. 1867, p. 390, Azores.

Myllæna fuscula, Wollaston, *l. c.* p. 233, Cape Verde Islands (S. Iago).

Pycnaræa nigripes, C. G. Thomson, *l. c.* p. 251, Scania.

Bessobia fungivora, C. G. Thomson, *l. c.* p. 260, Lund.

Liogluta aquatilis, C. G. Thomson, *l. c.* p. 264, and *L. microptera*, Thoms. *l. c.* p. 266, Scania.

Atheta opacula, C. G. Thomson, *l. c.* p. 272, *A. breviceps*, Thoms. *l. c.* p. 273, *A. glabricula*, Thoms. *l. c.* p. 280, Scania; *A. mortuorum*, Thoms. *l. c.* p. 281, near Ystad; *A. dadopora*, Thoms. *l. c.* p. 283, Scania.

Zonoptilus piceus, Solsky, Horæ Soc. Ent. Ross. iv. p. 88, Sarepta.

Tachyporides.

Phlœonomus punctipennis, sp. n., C. G. Thomson, Skand. Col. ix. p. 317, and *P. abietinus*, sp. n., Thoms. *l. c.* p. 318 (=*P. pusillus*).

Staphylinides.

A. Fauvel communicates (Bull. Soc. Ent. Fr. 1867, pp. liii–lvi) a note on the synonymy of various European species of *Staphylinus* and *Ocypus*, and the description of a new species of the latter genus. His synonymic remarks

are as follows:—*Ocypus etruscus* (Gaut.)=*S. tricinctus* (Gené); *S. ventralis* (Gené)=*Quedius truncicola* (Fairm.); *S. cingulus* (Comolli)=*S. fulvipes* (Scop.); *S. brachypterus* (Brullé) is an *Ocypus* peculiar to the Canaries; *O. brachypterus* (Kraatz, Fairm., Redt. non Brullé)=*O. micropterus* (Redt.), which is probably identical with *O. olens*; *Ocypus alpestris* (Erichs.), *similis* (Fab.), and *cyaneus* (Payk.) are tabulated *l. c.* p. lvi.

Philonthus varius (Gyll.), with a thin excrescence on the prothorax, described by Perty, Mitth. naturf. Ges. in Bern, 1867, p. 306.

New species:—

Tanygnathus varicornis, Wollaston, Col. Hesp. p. 234, Cape Verde Islands.

Quedius polystigma, Wankowiez, Ann. Soc. Ent. Fr. 4e sér. vii. p. 253, Minsk.

Staphylinus hesperus, Crotch, Proc. Zool. Soc. 1867, p. 391, Azores.

Staphylinus cerdo, Gerstäcker, Arch. f. Naturg. xxxi. p. 27, Zanzibar.

Ocypus baudii, Fauvel, Bull. Soc. Ent. Fr. 1867, p. lv, Valais, Bernina.

Philonthus linki, Solsky, Horæ Soc. Ent. Ross. iv. p. 81, Samara.

Philonthus rubiginosus, Solsky, Horæ Soc. Ent. Ross. v. p. 30, Egypt.

Philonthus addendus, Sharp, Trans. Ent. Soc. Lond. 3rd ser. v. p. 440 (?=*temporalis*, Muls.), near Edinburgh.

Philonthus marginipennis, Wollaston, Col. Hesp. p. 236, and *P. sinuatus*, Woll. *l. c.* p. 239, Cape Verde Islands.

Philonthus nigriventris, C. G. Thomson, Skand. Col. ix. p. 147, Scania.

Philonthus cordicollis, Gerstäcker, *l. c.* p. 28, Zanzibar.

Microsaurus 4-punctatus, C. G. Thomson, *l. c.* p. 159, *M. temporalis*, Thomson, *l. c.* p. 161, *M. fageti*, Thoms. ibid., *M. puncticollis*, Thoms. *l. c.* p. 164, Scandinavia.

Platyprosopus bagdadensis, Stierlin, Mitth. schw. ent. Ges. ii. p. 218, Bagdad.

Philothalpus deyrollei, Solsky, Horæ Soc. Ent. Ross. iv. p. 105, Mexico.

Pæderides.

Gautier des Cottes (Mitth. schweiz. ent. Gesellsch. ii. p. 161) remarks upon the suppression of his *Pæderus longicollis* by De Marseul in his last Catalogue.

New species:—

Scopæus crassipes, Wollaston, Col. Hesp. p. 242, and *S. filiformis*, Woll. *l. c.* p. 243, Cape Verde Islands.

Pæderus erichsoni, Wollaston, *l. c.* p. 247 (=*P. angolensis*, Erichs.?), Cape Verde Islands (S. Iago).

Pæderus rufitarsis, Solsky, Horæ Soc. Ent. Ross. iv. p. 106, Mexico.

Pæderus tumidicollis, Gerstäcker, Arch. f. Naturg. xxxi. p. 28, and *P. pedestris*, Gerst. *l. c.* p. 29, Zanzibar.

Lathrobium jansoni, G. R. Crotch, Trans. Ent. Soc. Lond. 3rd ser. v. p. 441, England.

Lathrobium gracile, Solsky, *l. c.* p. 82, Sarepta.

Lathrobium sareptanum, Stierlin, Mitth. schw. ent. Ges. ii. p. 219, Sarepta.

Achenium pallidipenne, Stierlin, *l. c.* p. 220, Sarepta.

Medon lætus, C. G. Thomson, Skand. Col. ix. p. 186, Scandinavia.

Pinophilides.

Palaminus decussatus, sp. n., Wollaston, Col. Hesp. p. 250, Cape Verde Islands.

Pinophilus fossor, sp. n., Wollaston, *l. c.* p. 252, Cape Verde Islands (S. Iago).

Œdichirus stilicinus, sp. n., Gerstäcker, Arch. f. Naturg. xxxi. p. 30, Zanzibar.

Stenides.

Stenus siculus, sp. n., Stierlin, Mitth. schw. ent. Ges. ii. p. 221, Sicily.

Stenus pulchripes, sp. n., Solsky, Horæ Soc. Ent. Ross. v. p. 31, Sarepta.

Stenus shepherdi, sp. n., G. R. Crotch, Trans. Ent. Soc. Lond. 3rd ser. v. p. 441, Hammersmith; *S. annulatus*, sp. n., G. R. Crotch, *l. c.* p. 442, England.

Oxytelides.

Oxyporus maxillosus (Fab.). Wankowicz (Ann. Soc. Ent. Fr. 4e sér. vii. pp. 254 and 255) discusses the variations of this species, to which he refers *O. mannerheimii* (Gyll.).

Platystethus brevipennis (Baudi) occurs at Odessa, and is probably identical with *P. rufospinus* (Hochh.) according to Solsky, Horæ Soc. Ent. Ross. iv. p. 84.

Oxytelus flavipes (Steph.) of Murray's "Catalogue of Scottish Coleoptera" proves to be *O. maritimus* (Thoms.). *O. flavipes* is not represented in Stephens's Cabinet; but the Scotch species can hardly be identified with it. McNab, Ent. M. Mag. iv. p. 112.

New species :—

Oxytelus depauperatus, Wollaston, Col. Hesp. p. 254, Cape Verde Islands.

Oxytelus eppelsheimii, Bethe, Stett. ent. Zeit. 1867, p. 307, Bavaria.

Euæsthetus mariæ, Bethe, *l. c.* p. 308, Bavaria.

Trogophlœus dilutus, Wollaston, *l. c.* p. 255, Cape Verde Islands.

Bledius crenulatus, Stierlin, Mitth. schw. ent. Ges. ii. p. 222, Sarepta.

Piestides.

Lispinus singularis, sp. n., Gerstäcker, Arch. f. Naturg. xxxi. p. 30, Zanzibar.

Pselaphidæ.

Brendel (Proc. Ent. Soc. Phil. vi. p. 191) describes a *Bryaxis intermedia*, which he regards as a climatic variety of *B. abdominalis*, intermediate between *B. abdominalis* and *B. floridana*, the latter being probably also a variety. He also gives (*l. c.* p. 194) comparative characters of the females of 9 North American species, and remarks (p. 193) that *B. clavata* is a truly distinct species.

New species :—

Fustiger fuchsii, Brendel, Proc. Ent. Soc. Phil. vi. p. 190, Tennessee.

Ctenistes monilicornis, Brendel, *l. c.* p. 190, Washington.

Batrisus punctiicollis, Tournier, Ann. Soc. Ent. Fr. 4e sér. vii. p. 561, pl. 13. fig. 2 (antenna), Geneva.

Euplectus tuberculosus, Tournier, *l. c.* p. 563, pl. 13. fig. 4, Geneva.

Trimium latipenne, Tournier, *l. c.* p. 564, pl. 13. fig. 6 (thorax and elytra), Geneva; *T. chevrieri*, Tourn. *l. c.* p. 565, pl. 13. fig. 7 (thorax and elytra), Geneva.

Bryaxis aubei, Tournier, *l. c.* p. 563, pl. 13. fig. 3 (abdomen and post. tibia), Sicily.

Bryaxis perforata, Brendel, *l. c.* p. 192, New York; *B. atlantica*, Brendel, *l. c.* p. 193, South Carolina and Louisiana; *B. ulkei*, Brend. ibid., Washington.

Bryaxis gemmula, Wollaston, Col. Hesp. p. 221, Cape Verde Islands.

Paussidæ.

Gerstäcker remarks (Stett. ent. Zeit. 1867, p. 431) upon the distinctive characters of *Paussus chevrolatii* (Westw.), especially those presented by the prothorax. He also indicates (*l. c.* p. 431) that *P. curtisii* (Westw.) probably = *P. shuckardi* (Westw.), and remarks that *P. granulatus* (Westw.) most probably belongs to the genus *Hylotorus* (Dalm.), of which *P. bucephalus* (Gyll.) is the type (*l. c.* pp. 431–434).

Cerapterus macleayii. C. A. Wilson communicates notes on the habits of this species, which is found under dry cow-dung in South Australia. Proc. Ent. Soc. 1867, pp. lxxi–lxxii.

Paussus procerus, sp. n., Gerstäcker, Stett. ent. Zeit. 1867, p. 429, and *P. lætus*, sp. n., Gerst. *l. c.* p. 430, Abyssinia.

Scydmænidæ.

Schaufuss (Nova Acta, &c. xxxiii.) gives a general sketch of the history, literature, and geographical distribution of the insects of this family, as introductory to a monograph of the species inhabiting Central and South America. The total number of species described is 68, namely, of *Scydmænus* 44 (42 new), of *Eumicrus* 23 (20 new), and of *Cephennium* 1 (new). He remarks that, with the exception of *Mastigus*, all known *Scydmænidæ* may be divided into two great sections, namely, those in which the fourth joint of the maxillary palpi is subulate, forming the genus *Scydmænus*, and those in which the fourth joint of the maxillary palpi is somewhat obtuse and forms a more or less elongated spindle with the third, this being either long and fusiform (in *Eumicrus*) or short and oviform (in *Cephennium*).

Scydmænus. Schaufuss (*l. c.*) describes the following new American species of this genus:—*S. trigeminus*, p. 37, tab. 1. fig. 1, *S. hirsutus* (Chevr. MS.), p. 41, *S. galericulatus*, p. 51, *S. terminatus*, p. 56, *S. simplicitus*, p. 57, *S. bifoveolatus*, p. 65, *S. chevrolatii* (Pil. MS.), p. 69, tab. 2. fig. 8, and *S. spinipes* (Chevr. MS.), p. 73, tab. 2. fig. 12, from Mexico; *S. cavifrons*, p. 38, *S. biimpressus*, p. 39, *S. pustulatus*, p. 46, *S. elegans*, p. 52, and *S. subimpressus*, p. 55, from Brazil; *S. gibbulus*, p. 39, *S. corpulentus*, p. 43, *S. nanulus*, p. 44, *S. antennatus*, p. 46, *S. grandicollis*, p. 50, *S. festivus*, p. 66, *S. batesii*, p. 71, tab. 2. fig. 11, *S. boucoulroirii*, p. 73, tab. 2. fig. 13, from the Amazons; *S. ellipticus*, p. 40, tab. 1. fig. 2, *S. hirtipes*, p. 53, *S. trifoveatus*, p. 57, tab. 1. fig. 5, *S. asserculatus*, p. 68, from New Granada; *S. longipalpis*, p. 45, *S. piliferus*, p. 49, *S. suturalis*, p. 53, from Venezuela; *S. humeralis*, p. 54, tab. 1. fig. 4, from New Granada and Venezuela; *S. plicatulus*, p. 42, from New Granada and Mexico; *S. validicornis*, p. 48, from Columbia; *S. campestris*, p. 47, tab. 1. fig. 3, *S. absconditus*, p. 61, *S. latitarsus*, p. 62, *S. longiceps*,

p. 67, and *S. nodicornis*, p. 70, tab. 2. fig. 9, from Chili; *S. breviceps*, p. 58, tab. 1. fig. 6, *S. gundlachii*, p. 59, *S. globulicollis*, p. 64, *S. patens*, p. 66, tab. 2. fig. 7, *S. dentipes* (Gundl. MS.), p. 71, tab. 2. fig. 10, from Cuba; *S. testaceus*, p. 49, Porto Rico and St. Thomas.

Eumicrus. Of this genus Schaufuss (*l. c.*) describes the following new American species:—*E. mexicanus*, p. 78, *E. speculator*, p. 79, *E. bisphæricus*, p. 82, and *E. commilitonis*, p. 84, from Mexico; *E. rubens*, p. 86, Columbia; *E. brunneus*, p. 89, from Columbia and Mexico; *E. latus*, p. 87, tab. 4. fig. 18, and *E. dux*, p. 91, tab. 4. fig. 19, from Caracas; *E. idoneus*, p. 91, from Venezuela; *E. deplanatus*, p. 81, tab. 3. fig. 17, Caracas and Venezuela; *E. impressicollis*, p. 83, and *E. subnudus*, p. 86, from Brazil; *E. annulicornis*, p. 77, tab. 3. fig. 15, *E. minutissimus*, p. 77, tab. 3. fig. 16, *E. venustus*, p. 80, *E. semipunctatus*, p. 81, *E. sphæricollis*, p. 85, from the Amazons; *E. flaveolus*, p. 84, from Chili; *E. pubescens*, p. 76, tab. 3. fig. 14, and *E. brevicornis*, p. 93, from Cuba.

Cephennium spinicolle, Schaufuss, *l. c.* p. 95, tab. 4. fig. 20, New Granada.

Cephennium australe, Wollaston, Col. Hesp. App. p. 277, Madeira.

Silphidæ.

C. G. Thomson (Skand. Col. ix. p. 340) refers the genus *Eucinetus* to this group, where he makes it constitute a tribe of his family *Catopidæ*, as shown in the following table:—

A. Posterior coxæ very large, laminated, concealing the femora; antennæ not clavate ..... *Eucinetina.*

B. Posterior coxæ simple; posterior femora free.

a. Antennæ rather long, club 5-jointed, interrupted .. *Catopina.*

b. Antennæ not reaching base of thorax, club not interrupted. *Mylæchina.*

He characterizes the genus *Eucinetus* and the species *E. hæmorrhoidalis* (Germ.), which has been detected in various parts of Scandinavia.

Catopsimorphus fairmairii (Delarouzé) = *C. formicetorum* (Peyr.), according to Abeille de Perrin (Ann. Soc. Ent. Fr. 4e sér. vii. p. 69).

Necrophorus. Grenier refers *N. gallicus* (J. Duv.) and *N. microcephalus* (Thoms.) as varieties to *N. fossor* and *ruspator* respectively. Bull. Soc. Ent. Fr. 1867, p. x.

Silpha lævigata (Fab.). Girard notices the destruction of snails by this species and its larvæ (Bull. Soc. Ent. Fr. 1867, p. lxv). It is assisted by *S. obscura* (Linn.).

New genera:—

Nargus, g. n., C. G. Thomson, Skand. Col. ix. p. 349. Allied to *Catops*; mandibles denticulate; clypeus separated by a fine suture; antennæ obsoletely clavate, joint 2 longer than 3; tibiæ finely spinulose; joints 1–4 of anterior tarsi dilated in ♂. Sp. *Catops velox* (Erichs.) = *scitulus* (Thoms.).

Demochrus, g. n., C. G. Thomson, *l. c.* p. 350. Allied to preceding; joint 5 of antennæ larger than the contiguous ones; tibiæ with small spines. Sp. *C. anisotomoides* (Spence).

Nemadus, g. n., C. G. Thomson, *l. c.* p. 351. Allied to *Ptomaphagus*; elytra not truncated at apex. Sp. *Catops colonoides* (Kraatz).

New species :—

Catops flavicornis, C. G. Thomson, Skand. Col. ix. p. 346, Scania.

Choleva spelæa, Bilimek, Verh. zool.-bot. Ges. in Wien, xvii. p. 902, Mexico (Cave of Cacahuamilpa).

Adelops croaticus. L. Miller, Verh. zool.-bot. Ges. in Wien, xvii. p. 551, from the Cave of Ozalj in Croatia.

Anisotomidæ.

Agathidium. D. Sharp has published (Trans. Ent. Soc. Lond. 3rd ser. vol. ii. pp. 445–452) a revision of the British species of this genus, in which he includes *Cyphoceble* (Thoms.). He rejects the names given by Stephens to 3 species, *A. ruficolle* (Marsh.) = *Amphicyllis globus* (Payk.), and *A. affine* (Marsh.) and *rufipes* (Steph.) as being insufficiently described, the former identical with *A. lævigatum* (Erichs.), and the latter unrecognizable and not represented by any specimens (probably = *A. atrum*, Payk.). The total number of species cited and characterized is 11, of which 3 are now described in more detail.

Agathidium convexum, Sharp, *l. c.* p. 449, Scotland; *A. clypeatum*, Sharp, *l. c.* p. 448, Mickleham and Northumberland; and *A. rhinoceros*, Sharp, *l. c.* p. 451, Perthshire.

Corylophidæ.

Arthrolips testudinalis, sp. n., Wollaston, Col. Hesp. p. 51, Cape Verde Islands (S. Iago).

Trichopterygidæ.

Bæocrara (Thoms.). Matthews states that *B. littoralis* (Thoms.) is a true *Trichopteryx*. The specific name cannot be retained, as Motschulsky described a *Trichopteryx littoralis*; and Matthews adopts Mulsant's name of *variolosum*, as having the priority over Sharp's *thomsoni*. Ent. M. Mag. iv. pp. 18–19.

Ptilium concolor, sp. n., Sharp, Trans. Ent. Soc. Lond. 3rd ser. v. p. 435, Yetholme.

Histeridæ.

De Marseul states that his *Teretrius quercus* = *Paromalus rothi* (Rosenh.), but that it is a true *Teretrius*. Bull. Soc. Ent. Fr. 1867, p. xviii.

Perty (Mitth. naturf. Ges. in Bern, 1867, p. 305, fig. 8) describes and figures a specimen of *Hister unicolor*, with an alteration in the sculpture of the elytra.

Ernest Cotty notices the mode in which he obtained *Margarinotus scaber* (Fab.) and *Saprinus cruciatus* (Payk.) in the neighbourhood of Algiers. The former was found under old sheepskins, and Cotty procured numerous specimens by placing these skins in suitable situations. Mém. Soc. Linn. du Nord de Fr. 1866, pp. 165–167.

Hypocaccus, g. n., C. G. Thomson, Skand. Col. ix. p. 400. Allied to *Saprinus*; forehead separated from clypeus by an elevated line; anterior tibiæ almost destitute of spurs; elytra not margined at apex. Sp. *Saprinus 4-striatus*, *rugifrons*, *metallicus*, *conjungens*, and *rufipes* (Thoms.).

New species :—

Hister arenicola, C. G. Thomson, Skand. Col. ix. p. 394, Scania.

Platysoma marginata and *P. 10-striata*, C. G. Thomson, *l. c.* p. 397 (= *P. frontalis*, auct.); and *P. pullum*, Gerstäcker, Arch. f. Naturg. xxxi. p 31, Zanzibar.

Carcinops garbiglietti, Marseul, Ann. Soc. Ent. Fr. 4e sér. vii. p. 55, Brazil.

Teretrius corticalis, Wollaston, Col. Hesp. p. 81, Cape Verde Islands (S. Iago).

Saprinus paivæ, Wollaston, *l. c.* p. 85, and *S. geminatus*, Woll. *l. c.* p. 86, Cape Verde Islands.

Paromalus digitatus, Wollaston, *l. c.* p. 88, Cape Verde Islands.

*Paratropus** *testudo*, Gerstäcker, *l. c.* p. 32, Zanzibar.

Phalacridæ.

Olibrus bicolor. According to Kawall (Stett. ent. Zeit. 1867, p. 118) the larva of this species lives among the seeds of the Dandelion, upon which it feeds.

Phalacrus aterrimus, sp. n., Wollaston, Col. Hesp. p. 55, Cape Verde Islands.

Olibrus gemma, sp. n., Wollaston, *l. c.* p. 56, and *O. notatus*, sp. n., Woll. ibid., Cape Verde Islands.

Lithocrus pallidus, sp. n., Wollaston, *l. c.* p. 57, Cape Verde Islands (S. Iago).

Nitidulidæ.

A. Murray has continued his list of the species of this family from Old Calabar (Ann. & Mag. N. H. 3rd ser. xix. pp. 167–179), in which he refers especially to the following genera :—

Prometopia (Erichs.), of which he gives the geographical range of 13 species, 2 only previously described (*l. c.* p. 168).

Axyra (Erichs.), with which *Galaor* (J. Thoms.) is identical, and which, according to Murray, stands between *Psilotus* and *Ischæna* (*l. c.* pp. 169–170). In connexion with this genus Murray discusses the means by which the true Nitidulidæ may be broken up into subordinate groups (see also p. 173), and suggests that instead of the two groups admitted by Lacordaire we should adopt three, namely *Nitidulini*, *Strongylini*, and *Lorditini*. Six species of the genus are known to Murray, 2 of which are here described as new. The characters of *Axyra brunnea* (Erichs.) and *A. (Galaor) perforata* (J. Thoms.) are also discussed by Murray (*l. c.* p. 171). The subgenus *Axyrodes* is proposed by Murray for two South American species of the genus.

Psilotus (Erichs.). Murray remarks (*l. c.* pp. 170–171) upon the figure of the labium of this genus given by Lacordaire, which, he says, represents that organ in a *Colastus*. He figures the labium in the latter genus and in *Psilotus* (*l. c.* p. 171, figs. A, B).

Pherocopis (J. Thoms.) is only a subgenus of *Platychora* (Erichs.). Its species are African; those of the typical subgenus live in South America (*l. c.* pp. 174–175).

* This name is substituted for *Phylloscelis* (Mars.), preoccupied in Rhynchota.

Lordites (Erichs.) The geographical range of the species of this genus, from Africa to the Philippine Islands, is indicated by Murray (*l. c.* p. 175). *Lordites procerus* (Erichs.) = *Lasiodactylus brunneus* (Perty). *Silpha limbata* (Fab.) belongs to this genus.

Æthina and *Amphicrossus* (Erichs.), their species discussed by Murray (*l. c.* pp. 176 & 178).

Cryptarcha (Shuck.). Murray describes a new species forming the type of a subgenus, which he proposes to name *Arhina* (*l. c.* p. 178).

Forel enumerates (Bull. Soc. Vaud. Sci. Nat. ix. p. 79) *Meligethes viridescens, æneus*, and *lombaris*, and *Epurea æstiva* among the insects injurious to the Colza plant in the Canton de Vaud (see also p. 205).

Meligethes æneus. Frauenfeld (Verh. zool.-bot. Ges. in Wien, xvii. pp. 561–564) records the occurrence of this species in great quantities in 1867 upon the Rape-plants in Bohemia and Moravia. It is said to have done much injury to the crops, in conjunction with the larvæ of *Ceuthorhynchus sulcicollis* and *Baridius chloris*. See also Künstler, ibid. pp. 940–943.

Taracta, g. n., Murray, Ann. & Mag. Nat. Hist. 3rd ser. xix. p. 172. Allied to *Axyra*; first 3 joints of all the tarsi dilated; mentum broad; mandibles bidentate; labrum nearly entire; antennæ slender, club large, with its first joint long; lateral margins of prothorax slightly reflexed. Sp. *T. fryi*, sp. n., Murray, *l. c.* p. 174 (cum fig.), Old Calabar.

New species :—

Prometopia binotata, Murray, Ann. & Mag. Nat. Hist. 3rd ser. xix. p. 168 (cum fig.), Old Calabar.

Axyra elongata and *papillosa*, Murray, *l. c.* p. 171, Old Calabar.

Lordites circumflexus, Murray, *l. c.* p. 175 (cum fig.), Old Calabar.

Æthina tumida, Murray, *l. c.* p. 177 (*cum fig.*), Old Calabar.

Amphicrossus concolor, Murray, *l. c.* p. 177, and *A. fuscus*, Murray, *l. c.* p. 178, Old Calabar.

Arhina strongyloides (subg. *Cryptarcha*), Murray, *l. c.* p. 179, Old Calabar.

Cychramus henonii, Fairmaire, Ann. Soc. Ent. Fr. 4e sér. vii. p. 395, Bone.

Ipidia integra, Wankowicz, Ann. Soc. Ent. Fr. 4e sér. vii. p. 252, Minsk.

Cybocephalus nitens, Wollaston, Col. Hesp. p. 50, Cape Verde Islands.

Trogositidæ.

Murray describes *Gymnocheila squamosa* (G. R. Gray), Ann. & Mag. N. H. 3rd ser. xix. p. 335, and remarks on *Hectarthrum gigas* (Fab.) and *curtipes* (Newm.), *l. c.* pp. 338, 339. He also gives the character of *H. quadrilineatum* (Smith).

Nosodes serrata (Lec.). Horn notices the habits of this species. Proc. Ent. Soc. Phil. vi. p. 200.

New species :—

Alindria alutacea, Murray, Ann. & Mag. N. H. 3rd ser. xix. p. 334, Old Calabar.

Peltis crenata, Murray, *l. c.* p. 336, and *P. ciliata*, Murray, *l. c.* p. 337, Old Calabar.

Bothrideres spleniatus, Murray, *l. c.* p. 337, Old Calabar.

Hectarthrum smithii, Murray, *l. c.* p. 339, and *H. simplex*, Murray, *l. c.* p. 340, Old Calabar.

Colydiidæ.

Rhagodera. G. H. Horn (Proc. Ent. Soc. Phil. vi. pp. 294–296) characterizes this genus and the species *R. tuberculata* (Mann.), and describes a new species.

Anchomma costatum (Lec.). Habits noticed by Horn, Proc. Ent. Soc. Phil. vi. p. 290.

Synchita mediolanensis (Villa) is cited as probably a British species by Rye, Ent. Ann. 1868, p. 65.

New species :—

Synchyta impressa, Wollaston, Col. Hesp. p. 61, and *S. crenicollis*, Woll. *l. c.* p. 62, Cape Verde Islands (S. Iago).

Ditoma lyctiformis, Wollaston, *l. c.* p. 63, and *D. linearis*, Woll. *l. c.* p. 64, Cape Verde Islands (S. Iago).

Ditoma? jelskii, Wankowicz, Ann. Soc. Ent. Fr. 4e sér. vii. p. 249, Minsk. (Probably the type of a new genus, for which the author proposes the name of *Lado*.)

Tarphius wollastoni, Crotch, Proc. Zool. Soc. 1867, p. 386, pl. 23. fig. 1, Azores.

Rhagodera costata, Horn, Proc. Ent. Soc. Phil. vi. p. 295, Arizona.

Cucujidæ.

Brontes planatus (Linn.) is figured as British by Rye, Ent. Ann. 1868, Front. fig. 6.

Cheilopoma, g. n., Murray, Ann. & Mag. N. H. 3rd ser. xx. p. 20. Palpi subcylindrical; clypeus very large, triangular, nearly concealing the mandibles; joint 1 of antennæ pear-shaped, shorter than 2, last joint twice as long as any of the rest; first joint of tarsi smallest. Sp. *C. castaneum*, sp. n., Murray, *l. c.* p. 20 (*cum fig.*), Old Calabar.

New species :—

Læmophlæus politissimus, Wollaston, Col. Hesp. p. 67, Cape Verde Islands.

Silvanus inarmatus, Wollaston, *l. c.* p. 69, Cape Verde Islands (S. Iago).

Silvanus signatus, Frauenfield, Verh. zool.-bot. Ges. in Wien, xvii. p. 438, pl. 12. fig. 28, on board the 'Novara,' near Shanghai.

Æraphilus ruthenus, Solsky, Horæ Soc. Ent. Ross. iv. p. 180, Sarepta.

Cryptophagidæ.

Latridii. Motschulsky (Bull. Soc. Nat. Mosc. xxxix. 2. pp. 225–229) characterizes this group, and remarks upon its constituent genera as follows:—Of the genera referred by Lacordaire to his Latridii, *Langelandia*, *Monotoma*, *Dasycerus*, and *Myrmecoxenus* are to be excluded. *Langelandia* forms a distinct family; *Monotoma* constitutes a separate tribe, following the *Pycnomerides* among the *Colydiidæ*. *Dasycerus* goes at the end of the *Trichopterygidæ*, and *Myrmecoxenus* among the *Cucujidæ*. *Derodontus* (Leconte) goes with *Phloiophilus* (Waterh.). *Lathridius museorum* (Ziegl.) is a species of *Geoxenus* (Motsch.), belonging to the *Cucujidæ*, and *L. unicolor* (Ziegl.) is a species of *Cerylon*. Motschulsky regards the Latridii as most nearly allied to the *Trichopterygidæ*. He gives the following table of the genera:—

I. Elytra soldered; prothorax dilated; antennæ of 10, club of 2 joints.
Metophthalmus[1], Mots.

II. Elytra free.

A. Club of antennæ of 3 joints.

1. Surface smooth, or scarcely pubescent.

a. Elytra convex, attenuated behind; prothorax quadrangular, rather narrow, with longitudinal keels .... *Lathridius* (Herbst).

b. Elytra depressed; prothorax without raised keels.

* Prothorax in front without salient lobes.
Permidius, g. n.

† Prothorax in front with the angles lobed.
Isidius, g. n.

c. Elytra elliptical and somewhat convex; prothorax elongated and constricted behind..... *Aridius*, g. n.

2. Surface strongly pubescent.

a. Prothorax more or less angular at the sides, with a transverse impression near the base ..... *Melanophthalma*, g. n.

b. Prothorax rounded at the sides, which are usually crenulated.

* Joints 9 and 10 of antennæ transverse.
Migneauxia (Duval).

† Joints 9 and 10 of antennæ elongated.
Corticaria (Marsh.).

B. Club of antennæ of 2 joints.

1. Surface nearly smooth; striæ of elytra very fine.
Cortilena, g. n.

2. Surface smooth; elytra with 1 stria close to the suture.

a. Antennæ 10-jointed in ♂, 11-jointed in ♀.
Tocalium, g. n.

b Antennæ of 11 joints in both sexes .. *Calyptobium* (Villa).

c. Antennæ 9-jointed in ♂, 10-jointed in ♀.
Holoparamecus (Curt.).

Motschulsky (*l. c.* pl. 6) figures *Lathridius lardarius* (De G.), fig. 1 (thorax); antenna of *Corticaria*, fig. 10, *Myrmecoxenus vaporariorum*, fig. 11.

Frauenfeld describes the larva and pupa of *Mycetophagus quadripustulatus* (Linn.), found by him in *Boletus sulphureus*, Verh. zool.-bot. Ges. in Wien, xvii. p. 781.

Loberus impressus (Lec.) and *Litargus 4-spilotus* (Lec.) are referred to by Walsh as inquilines of Willow-galls. Proc. Ent. Soc. Phil. vi. p. 265.

Lathridius carbonarius (Chevr.) is recorded as British by Rye, Ent. Ann. 1868, p. 78.

Diplocœlus fagi (Guér.) is recorded as British by Rye, Ent. Ann. 1868, p. 66.

New genera :—

Cortilena, g. n., Motschulsky, Bull. Soc. Nat. Mosc. xl. 1. p. 95. (See table above.) Sp. *Corticaria picta* (Lec.), *C. pallens* (Motsch.), *C. simplex* (Lec.); *Cortilena nigripennis*, sp. n., Motsch. *l. c.* p. 96, Mobile.

Tocalium, g. n., Motschulsky, *l. c.* p. 97. (See table above.) Sp. *T. orientale* and *T. externum*, sp. n., Motsch. *l. c.* p. 97, East Indies.

[1] Including *Bonvouloiria* (J. Duval).

Permidius, g. n., Motschulsky, Bull. Soc. Nat. Mosc. xxxix. 2. p. 243. (See table, p. 247.) Known sp. *Lathridius anthracinus* (Mann.), *exaratus* (Fald.), *mannerheimii* (Kolen.), *cordaticollis* (Aubé), *minutus* (Linn.), *hirtus* (Schüp.), *rugosus* (Herbst), *consimilis* (Mann.), *assimilis* (Mann.), *parallelocollis* (Mann.), *scitus* (Motsch.), *brasiliensis* (Mann.), *rugipennis* (Mann.), *planatus* (Motsch.), *dubius* (Motsch.), *minutissimus* (Motsch.), *transversus* (Oliv.), *crenatus* (Lecconte), *brevicornis* (Schüp.), *carbonarius* (Chevr.), *elegans* (Aubé), *filiformis* (Dahlb.), *parallelus* (Schüp.), *filum* (Aubé), *reflexus* (Lec.), *cordicollis* (Mann.), *pulicarius* (Melsh.), and *nanulus* (Mann.). N. sp. *P. flavicornis*, Motsch. *l. c.* p. 245, Cape of Good Hope; *P. basalis*, Motsch. *l. c.* p. 246, Cape of Good Hope; *P. aterrimus*, Motsch. *l. c.* p. 253, Niagara; *P. hexagonalis*, Motsch. *l. c.* p. 254, Carniolia; *P. inflaticeps*, Motsch. *l. c.* p. 255, pl. 6. fig. 5, Crimea.

Isidius, g. n., Motschulsky, *l. c.* p. 257. (See table, p. 247.) Known sp. *Lathridius gemellatus* (Mann.), *quadricollis* (Mann.), *sobrinus* (Mann.), *protensicollis* (Mann.). N. sp. *Isidius recticollis*, Motsch. *l. c.* p. 258, pl. 6. fig. 6, Japan and Kurile Islands; *I. kamtschaticus*, Motsch. *l. c.* p. 259, Kamtschatka.

Aridius, g. n., Motschulsky, *l. c.* p. 260. (See table, p. 247.) Known sp. *L. nodifer* (Westw.), *nervosus* (Motsch.), *carinatus* (Gyll.), *incisus* (Mann.), *ceylanicus* (Motsch.), *limbatus* (Först.), *carinulatus* (Motsch.), *monticola* (Mann.), *constrictus* (Gyll.), *sculptilis* (Lec.), *elongatus* (Curt.), *clathratus* (Dahlb.), *anatolicus* (Motsch.), *concinnus* (Schüp.), *exilis* (Dej.), *ruficollis* (Marsh.), *collaris* (Mann.), *liliputanus* (Villa), *tantillus* (Mann.). N. sp. *A. nodulosus*, Motsch. *l. c.* p. 261, pl. 6. fig. 7, England; *A. seminiveus*, Motsch. *l. c.* p. 265, Havannah; *A. maritimus*, Motsch. *l. c.* p. 266, Alexandria; *A. atripennis*, Motsch. *l. c.* p. 267, Pennsylvania.

Melanophthalma, g. n., Motschulsky, *l. c.* p. 269, pl. 6. fig. 8 (antenna). (See table, p. 247.) Known sp. *Corticaria obtusa* (Lec.), *brevicollis* (Chevrier), *transversalis* (Schüp.), *regularis* (Lec.), *herbicagans* (Lec.), *rufula* (Lec.), *hortensis* (Motsch.), *pumila* (Mels.), *crocata* (Motsch.), *fuscotestacea* (Motsch.), *curticollis* (Mann.), *angulosa* (Motsch.), *morsa* (Lec.), *distinguenda* (Chevrier), *umbripennis* (Motsch.), *sericea* (Motsch.), *parvicollis* (Mann.), *corpulenta* (Motsch.), *gibbosa* (Herbst), *Lathr. cylindricollis* (Motsch.). Sp. n. *M. maura*, Motsch. *l. c.* p. 271, Styria and South Russia; *M. algirina*, Motsch. *l. c.* p. 273, pl. 6. fig. 9, Algeria, Egypt, and Corsica; *M. helcola*, Motsch. *l. c.* p. 275, Pennsylvania; *M. pilosella*, Motsch. *l. c.* p. 276, Columbia; *M. complanata*, Motsch. *l. c.* p. 277, Brazil; *M. angulicollis*, Motsch. *l. c.* p. 278, East Indies; *M. hexagona*, Motsch. *l. c.* p. 279, East Indies; *M. retroculis*, Motsch. *l. c.* p. 280, East Indies; *M. subangulata*, Motsch. *l. c.* p. 281, New Orleans and Alabama; *M. inermis*, Motsch. *l. c.* p. 283, New Orleans; *M. inculta*, Motsch. ibid., Georgia (U.S.); *M. basicollis*, Motsch. *l. c.* p. 285, Panama; *M. picina*, Motsch. ibid., Cape of Good Hope; *M. russula*, Motsch. *l. c.* p. 286, Panama; *M. rutila*, Motsch. *l. c.* p. 288, Egypt; *M. cylindronota*, Motsch. ibid., California; and *M. flavicollis*, Motsch. *l. c.* p. 290, Havannah.

New species:—

Cryptophagus sericeus, Murray, Ann. & Mag. N. H. 3rd ser. xx. p. 21, Old Calabar.

Metophthalmus creticollis, Wollaston, Col. Hesp. p. 76, Cape Verde Islands.

Corticaria. Of this genus Motschulsky (Bull. Soc. Nat. Mosc. xl. 1) indicates 122 species, of which the following are described as new:—*C. pilosa*,

p. 48, Alexandria; *C. villosa*, ibid., Mesopotamia; *C. setosa*, p. 49, Sea of Azoff; *C. capensis*, p. 51, Cape of Good Hope; *C. validipes*, p. 54, Russia; *C. ciliata*, p. 55, Madeira; *C. striatopunctata*, p. 56, Pennsylvania; *C. adustipennis*, p. 57, Cape of Good Hope; *C. quadricollis*, p. 59, Cape of Good Hope; *C. debilis*, p. 61, Pennsylvania; *C. limbicollis*, p. 64, East Siberia; *C. salpingoides*, p. 65, California; *C. boreophila*, ibid., East Siberia and Kamtschatka; *C. flavifrons*, p. 66, Madeira; *C. attenuata*, p. 67, Madeira; *C. cylindripennis*, p. 68, Bavaria; *C. punctatissima*, p. 69, Crimea; *C. borealis* (Wollast. MS.), p. 70, England; *C. subpicea*, ibid., Crimea; *C. abietorum*, p. 71, St. Petersburg; *C. depressiuscula*, p. 72, North America; *C. ferruginosa*, p. 73, Georgia (U.S.); *C. pharaonis*, p. 74, Egypt; *C. transversicollis*, p. 76, Alexandria; *C. unicarinulata*, ibid., Madeira, Germany, and Georgia; *C. tenuicornis*, p. 77, Cape of Good Hope; *C. stigmosa*, p. 79, Styria; *C. psammeticha*, p. 80, Egypt; *C. ovipennis*, p. 81, Pennsylvania; *C. subrugosa*, p. 82, Egypt; *C. pilitecta*, p. 83, Egypt; *C. carinulata*, p. 84, Egypt; *C. rectangula*, p. 87, New Orleans; *C. pullula*, p. 89, Mobile; *C. amplipennis*, p. 91, Panama; *C. sericella*, p. 93, Mobile; *C. planiuscula*, p. 94, Mobile.

Corticaria immatura, Wollaston, *l. c.* p. 74, *C. bicolor*, Woll. *l. c.* p. 75, and *C. obliterata*, Woll. ibid., Cape Verde Islands.

Holoparamecus bipartitus, Wollaston, *l. c.* p. 73, Cape Verde Islands.

Holoparamecus brasiliensis, Motschulsky, *l. c.* p. 99, Brazil; *H. populi*, Motsch. ibid., Europe; and *H. longipennis*, Motsch. *l. c.* p. 100, Egypt.

Calyptobium attenuatum, Motschulsky, *l. c.* p. 101, East Indies; *C. obtusicorne*, Motsch. ibid., Austria; *C. clavipes*, Motsch. *l. c.* p. 102, East Indies; and *C. tuberculum*, Motsch. ibid., Egypt.

Paramecosoma langii, Solsky, Horæ Soc. Ent. Ross. iv. p. 90, Koslow.

Atomaria wollastoni, Sharp, Trans. Ent. Soc. Lond. 3rd ser. v. p. 435, near Edinburgh.

Metophthalmus lacteolus, Motschulsky, Bull. Soc. Nat. Mosc. xxxix. 2. p. 231, pl. 6. fig. 4, Crimea; *M. americanus*, Motsch. *l. c.* p. 233, Mobile.

Lathridius. Motschulsky (*l. c.*) describes the following as new species of this genus:—*L. pini*, p. 236, pl. 6. fig. 3, Russia and England; *L. dilaticollis*, ibid. pl. 6. fig. 2, St. Petersburg; *L. subbrevis*, p. 237, East Siberia; *L. ægyptiacus*, p. 240, Egypt; *L. trilobatus*, ibid., North America; *L. indicus*, p. 241, East Indies; *L. undulatus*, p. 242, England and South Russia; *L. lapponum*, p. 243, Lapland.

Mincauxia (sic) *villigera*, Motschulsky, Bull. Soc. Nat. Mosc. xl. 1. p. 40, Crimea and Caucasus.

Dermestidæ.

Tiresias serra. The larva found in old fungi on *Pinus abies*. Kawall, Stett. ent. Zeit. 1867, p. 123.

Dermestes subcostatus, sp. n., Murray, Ann. & Mag. N. H. 3rd ser. xx. p. 22, Old Calabar.

Attagenus ensicornis, sp. n., Wollaston, Col. Hesp. p. 80, Cape Verde Islands.

Byrrhidæ.

Anthrenus musæorum. Lucas remarks upon the transformations of this species, and especially upon the persistence of the spines on the head and in the vicinity of the stigmata in the pupa. Bull. Soc. Ent. Fr. 1867, pp. xxv, xxvi.

Limnichus fragilicornis, sp. n., Wollaston, Col. Hesp. p. 80, Cape Verde Islands (S. Antão).

Chelonarium le contei, sp. n. (Dej.), Thomson, Physis, i. p. 84, North America.

Lucanidæ.

Cornelius remarks (Stett. ent. Zeit. 1867, pp. 435–437) upon the occurrence of unusual numbers of *Lucanus cervus* in the neighbourhood of Elberfeld, and thinks that, as in the case of the Cockchafer, this excessive abundance may be a periodical phenomenon. He mentions the retention of life by the head and fore part of these insects when all the rest of the body has been torn away, and also the disproportion of the sexes, the ♀♀ being to the males as 6 to 1.

Abeille de Perrin remarks upon variations in the number of lamellæ in the antennæ of *Lucanus cervus* (Ann. Soc. Ent. Fr. 4e sér. vii. p. 70).

Ceratognathus alboguttatus, sp. n., Bates, Ent. M. Mag. iv. p. 54, New Zealand.

Scarabæidæ.

Coprides.

Von Harold (Col. Hefte, i. pp. 1–8) discusses the grouping and characters of the smaller Coprides allied to *Chæridium* and *Canthidium*, and indicates the following as natural subdivisions of this group :—

I. Scatonomidæ. Body oblong, smooth; forehead unarmed; upper part of eye elongate-oval, minute; posterior tibiæ simple; posterior tarsi with broad, shortly triangular joints; claws minute or deficient; prosternum without pits. Genera :—

A. Anterior tibiæ with teeth at the apex and not on the lateral margin. *Scatonomus.*

B. Anterior tibiæ with lateral teeth ..... *Onthocharis.*

II. Chœridiidæ. Body oblong, ovate or rotundato-ovate; upper part of eye usually minute, oblong-oval, sometimes larger (*Uroxys*); anterior tibiæ in ♂ scalpriform at apex, in ♀ scalpriform or obliquely truncate; posterior tibiæ simple or transversely carinate; joints of posterior tarsi elongate; claws normal; prosternum usually foveolate. Genera :—

A. Forehead transversely keeled.

1. Posterior tibiæ simple ..... *Caccobius.*
2. Posterior tibiæ with transverse keels ..... *Scatimus.*

B. Forehead unarmed or tuberculate, not keeled.

1. Eyes rather large; sides of thorax longitudinally foveolate. *Uroxys.*
2. Eyes minute; thorax with round foveoles.
   a. Anterior tibiæ scalpriform in both sexes; joint 1 of posterior tarsi dilated at apex; mesosternum distinct. *Chæridium.*
   b. Anterior tibiæ scalpriform in ♂, obliquely truncate in ♀; joint 1 of posterior tarsi elongate, scarcely dilated; mesosternum very short ..... *Canthidium.*

III. Copridæ (*genuini*). Body oblong-ovate, ovate or subquadrate, more or less hairy beneath; upper part of eye oval, rather large; anterior tibiæ obliquely truncate at apex; posterior simple, denticulate or transversely carinate; claws distinct. (Genera *Ontherus*, *Pinotus*, *Copris*, &c.)

The genera *Coptorrhina*, *Sarophorus*, *Macroderes*, and *Pedaria*, referred to

the *Scatonomidæ* by Lacordaire, belong to the *Ateuchides*, as also probably *Odontoloma* (Boh.), unknown to the author. The South American *Pedariæ* are nearly allied to *Chæridium*, and should form a distinct genus beside it.

Of the genus *Canthidium* (Erichs.), as above restricted, Von Harold describes 61 species, of which 50 are new; *C. lentum* and *thalassinum* (Erichs.) are unknown to him, and he reprints their diagnoses (*l. c.*) p. 60. Other known species referred to this genus by the author are:—*Copris sulcata* (Perty), *C. decorata* (Perty)=*Canthon scapularis* (Cast.), *Coprobius thalassinus* (Sturm) changed to *Canthidium smaragdinum*, *Chæridium punctato-striatum* (Sturm) changed to *lucidum*, *Scarabæus melanocephalus* (Oliv.), *Onthophagus onitoides* (Perty), *Chæridium nitidum* (Blanch.) *, *Copris ruficollis* (Germ.)=*Onth. cruentus* (Perty), *Chæridium collare* (Cast.), and *Ateuchus chrysis* (Fab.).

In a supplementary paper (Col. Hefte, ii. p. 61) Von Harold describes *C. lentum* (Erichs.), and mentions that *Chæridium viride* and *virescens* (Luc.) are very nearly allied to *C. sulcatum* (Perty). He also gives additional notes on the following species:—*C. smaragdinum, obscurum, auricolle, kiesenwetteri, kraatzi, lævigatum, versicolor, dispar, lucidum* (Harold), *onitoides* (Perty) with which *Chærid. trituberculatum* (Luc.) is identical; *C. lugubre* (Harold)=*breve* (Germ.); *C. mœstum* (Har.); *C. lebasi* and *globulum* (Har.); *C.* (*Ateuchus*) *humerale* (Germ.); *C. collare* (Cast.); *C. aterrimum, picipes* (Har.); *C. muticum* (Boh.); *C. rutilum* (Har.).

Of *Caccobius* (Thoms.), with which the uncharacterized genus *Histeridium* (Motsch.) is identical, Von Harold describes (Col. Hefte, ii. pp. 1–16) 14 species, 7 of which are new. The known species are *Scarabæus schreberi* (Fab.), *Onthophagus mundus* (Ménétr.), *O. histeroides* (Ménétr.)=*anthracinus* (Fald.)=*nigellus* (Kiesenw.), *Ateuchus aterrimus* (Fab.), *O. fuliginosus* (Roth) =*tigreanus* (Harold), *Copris vulcanus* (Fab.), and *O. nigritulus* (Klug).

Onthophagus. Von Harold has published (Col. Hefte, ii. pp. 23–59) a revision of the species of this genus, which he regards as including the genera *Chalcoderus*, *Psilax*, *Monapus*, and *Phalops* (Erichs.). He describes a good many new species, and remarks on the known species and their alliances. The following synonymic indications may be cited:—*O. laminatus* (MacL.)=*capella* (Kirby); *O. erichsoni* (Hope) belongs to the group named *Psilax* by Erichson; *O. flavolineatus* (Blanch.)=*posticus* (Erichs.); *O. cupreoviridis* (Blanch)=*anisocerus* (Erichs.); *O. furcatus* (MacL.)=*cereus* (Hope)=*auritus* (Erichs.); *O. rubrimaculatus* (MacL.)=*quadripustulatus* (Fab.); *Scarab. bipustulatus* (Fab.) is described, p. 34; *O. capella* (Boisd.)=*australis* (Guér.); *O. collaris* (Fahr.)=*loricatus* (Klug); *O. aulicus* (Fahr.)=*lanista* (Cast.); *O. worsissa* (Roth) includes 2 species, namely *O. tuberculicollis* (Cast.) and *worsissa* (Roth), characterized by Von Harold (pp. 40, 41); *Scarab. tridens* (Fab.) is an *Onthophagus* here described (p. 46). At pp. 45, 46, Von Harold gives a list of the Abyssinian species of this genus, of which he enumerates 19.

Von Harold (Col. Hefte, i. pp. 73–75) remarks upon and explains the confusion that has arisen with regard to two species of *Gymnopleurus* described respectively by Wiedemann and MacLeay under the name of *G. mundus*. Wiedemann's species, from the East Indies, was the first described; it was subsequently described by Castelnau under the name of *G. capicola* (Hope). For

* Vide infrà sub sp. nov. p. 253.

this species the author retains the name of *G. mundus* (Wied.). *G. mundus* (MacLeay), from the Cape of Good Hope, no doubt identical with *G. capicola* (Hope, MS.),=*G. fastiditus* (Dej. Cat.), and under this denomination it is briefly described by Von Harold (*l. c.* p. 74).

Von Harold gives the following indications of the synonymy of some of Germar's species from the inspection of the types (Berl. ent. Zeitschr. 1867, p. 244):—*Copris gracilicornis*=*Onthoph. spinifex* (Fab.); *C. analis* is an *Onthophagus*; *C. inhiata, crinicollis, bicuspis, semicæca*, and *semicuprea* belong to *Copris* (subg. *Pinotus*, Erichs.); *C. pauperata* is a *Chæridium*; *C. brevis*=*Canthidium lugubre* (Har.); *C. ruficollis* is a *Canthidium* and=*Onth. cruentus* (Perty); *Ateuchus humeralis* is a *Canthidium*; *A. lituratus* and *bispinus* belong to *Canthon*, as also *A. probus* (=*C. praticola*, Lec.) and *cinctellus*; *A. vividus* is a *Chæridium*.

Hensel found a small species of *Onthocharis* living on a large *Bulimus* in Brazil. The beetle fed upon the mucous secretion of the mollusk, and was frequently drawn within the shell by its contraction. Stein, Berl. ent. Zeitschr. 1867, p. 212.

New species:—

Ateuchus erichsoni (Westerm.), Harold, Col. Hefte, ii. p. 94, East Indies.

Gymnopleurus melanarius (Dej.), Harold, Col. Hefte, i. p. 76, Sumatra.

Gymnopleurus æruginosus (Koll.), Harold, Col. Hefte, i. p. 94, Egypt and Kordofan.

Deltochilum burmeisteri, Harold, *l. c.* p. 76, Quito; *D. erodioides*, Harold, *l. c.* p. 77, Peru.

Epilissus silphoides, Harold, *l. c.* p. 77, Brazil.

Megathopa columbica, Harold, *l. c.* p. 78, Columbia.

Canthon. Von Harold (*l. c.*) describes the following new species of this genus:—*C. prasinus* (Dej.) and *muticus*, p. 78, Brazil; *C. modestus*, p. 78, Columbia; *C. seminulum*, p. 79, Bahia; *C. ochropus*, ibid., Mexico; *C. angustatus*, ibid., Costa Rica; and *C. subhyalinus* (Schauf.), ibid., New Granada.

Uroxys coarctata (Dej.), Harold, Col. Hefte, i. p. 94, Columbia; *U. aterrima*, Harold, *l. c.* p. 95, Brazil.

Scatonomus insignis, Harold, *l. c.* p. 80, Brazil.

Onthocharis chalcea, Harold, *l. c.* p. 80, Brazil.

Chæridium puncticolle, Harold, Col. Hefte, ii. p. 95, and *C. mutilatum*, Harold, ibid., Brazil.

Deltorhinum (g. n.) *batesi*, Harold, *l. c.* p. 96, Ega.

Onthocharis germari, Harold, *l. c.* p. 96, Rio Janeiro.

Ontherus kirschii, Harold, *l. c.* p. 96, Bogota; *O. brevipennis*, Harold, *l. c.* p. 97, New Granada.

Pinotus. Harold (*l. c.*) describes the following new species of this genus:—*P. nutans*, p. 97, Uruguay; *P. sericeus*, ibid., *P. satanas* (Buq.), p. 98, *P. protectus*, ibid., and *P. achamas* (Buq.), p. 99, Columbia; *P. irinus* (Dej.), p. 97, Cayenne; *P. depressicollis*, p. 98, and *P. fissus* (Germ.), p. 99, Brazil; and *P. andicola*, p. 98.

Canthidium. Von Harold (Col. Hefte, i.) describes the following new species of this genus:—*C. obscurum*, p. 18, Columbia; *C. dispar*, p. 19 (=*Charid. congener*, Dej.), Brazil: *C. foveolatum*, p. 21, Brazil, Columbia, and ?Mexico; *C. kraatzi*, p. 24, *C. lævigatum*, p. 25, *C. kiesenwetteri*, p. 26,

C. auricolle, p. 27, and *C. marseuli*, p. 28, Brazil; *C. apicatum*, p. 30, Buenos Ayres; *C. cuprinum*, p. 33, Corrientes; *C. glabricolle* (Dej.), p. 34, and *C. globulum*, p. 36, Brazil; *C. bituberculatum*, p. 36, Buenos Ayres; *C. maestum*, p. 37, Brazil or Columbia; *C. lebasi* (Dej.), p. 38, Columbia; *C. lugubre*, p. 39, Brazil; *C. puncticolle*, ibid., Brazil and Mexico; *C. aterrimum*, p. 40, *C. flavipes*, p. 42, *C. clypeale*, p. 43, and *C. haagi*, p. 46, Brazil; *C. picipes*, p. 47, Columbia; *C. inerme*, p. 48, *C. politum*, p. 49, *C. difficile*, p. 50, Brazil*; *C. nanum*, p. 51, *C. gemmingeri*, p. 52, Columbia; *C. lætum*, p. 53, Mexico; *C. rutilum*, p. 54, *C. rufipes*, p. 57, and *C. versicolor*, p. 58, Brazil. Von Harold also describes (Col. Hefte, ii.):—*C. deyrollei*, p. 63, *C. dohrni*, p. 64, and *C. gerstäckeri*, p. 66, from Southern Cayenne and the Lower Amazons; *C. puncticeps*, p. 68, Montevideo; *C. gracilipes*, p. 69, Cayenne; *C. nobile*, p. 70, South Brazil; *C. taurinum*, p. 71, San João el Rey; *C. quadridens*, p. 73, Upper Amazons; *C. basale*, ibid., Tapajos; *C. batesi*, p. 74, Amazons and Tapajos; *C. æneolum*, p. 76, Tapajos, Para, and Cayenne; *C. paranum*, p. 77, Para; *C. rufinum*, p. 79, Columbia and Upper Amazons; *C. bovinum*, p. 81, Brazil; *C. aureolum*, p. 83 (= *C. nitidum*, Har. C. H. i. nec Blanch.); *C. abbreviatum*, p. 87, Sta. Catharina; *C. stâli*, p. 89, Brazil; *C. metallicum*, p. 90, Tapajos and Para; and *C. discolor*, p. 91, Amazons.

Onthophagus. Von Harold (Col. Hefte, ii.) describes the following new species of this genus:—*O. pentacanthus*, p. 24 (= *4-dentatus*, Hope, nec Fab.), Adelaide; *O. ferox*, p. 26, West and South Australia; *O. atrox*, p. 27, New South Wales; *O. capitosus*, p. 30, North-east Australia; *O. consentaneus*, p. 33 (= *granulatus*, MacLeay, nec Boh.), North-east Australia; *O. haagi*, p. 36, West Australia; *O. nodulifer*, p. 37, North-east Australia; *O. gerstäckeri*, p. 42, Abyssinia; *O. schaufussi*, p. 43, Abyssinia; *O. stenocerus*†, p. 48 (= *gracilicornis*, Fahr. nec Germar), *O. lutulentus*†, ibid. (= *lugubris*, Fahr. nec Roth); *O. virescens*†, ibid. (= *nitidulus*, Klug, Monatsb. 1855, nec Symb. Phys.); *O. bubalus* (Klug, MS.), p. 49, Cape; *O. strus* (Ill. MS.), p. 49, Cape; *O. sticticus*, p. 50, Egypt and Arabia; *O. quadraticeps*, p. 52, Orange State; *O. leucopygus*, p. 53, South Africa; *O. dregei* (Dej.), p. 54, Cape; *O. wittei*, p. 56, South Africa; *O. batesi*, p. 58, from the mouths of the Niger.

Caccobius. Von Harold (Col. Hefte, ii.) describes the following new species of this genus:—*C. denticollis*, p. 5, *C. rufipennis*, p. 8, *C. indicus*, p. 12, from India; *C. punctatissimus*, p. 13, Senegal?; *C. signatipennis*, p. 14, Senegal; and *C. dorsalis*, p. 16, Senegal.

Caccobius jessoensis, Harold, Col. Hefte, i. p. 100, Jesso.

Saprosites. Of this genus Von Harold describes (*l. c.*) the following five new species:—*S. dentipes*, p. 80, *S. puncticollis* and *S. breviusculus*, p. 81, Brazil; *S. meditans* and *parallelus*, p. 81, Columbia.

Aphodiides.

Harold (Berl. ent. Zeitschr. 1867, pp. 278–282) enumerates the Aphodiides of Chili, of which he recognizes 13 species, namely, *Aphodius granarius* (Linn.), *rugosiceps* (Har.), *fulviventris* (Fairm.), *Atœnius derbesis* (Sol.), *stercorator* (Fab.), *gracilis* (Mels.), *chilensis* (Sol.), *Pleurophorus cæcus* (Panz.)=*angustus* (Phil.), *Psammodius nanus* (De G.)=*parvulus* (Chevr.), and

* = *Onthoph. trinodosus* (Boh.); see Col. Hefte, ii. p. 88.

† These species are not described, but merely the change of name indicated.

4 new species. He proposes the following classification of these insects into subordinate groups, in anticipation of a general revision of the Aphodiides, to be published in the 'Coleopterologische Hefte':—

I. Posterior tibiæ with very short apical spurs ..... *Pseudaphodiidæ.*
II. Posterior tibiæ with spurs of normal length.
  A. Mandibles exposed.
    1. Pygidium concealed ..... *Ægialiidæ.*
    2. Pygidium free ..... *Chironidæ.*
  B. Mandibles concealed.
    1. Posterior tibiæ transversely carinated..... *Aphodiidæ.*
    2. Posterior tibiæ simple, without carinæ.
      a. Head rough, granulose ..... *Psammodiidæ.*
      b. Head smooth or rugose-punctate..... *Atæniidæ.*

Atænius, g. n., Harold, Col. Hefte, ii. p. 100. Allied to *Euparia*. Pygidium free; posterior tibiæ simple, straight; metasternum not abbreviated. Sp. *A. opacus*, sp. n., Harold, *l. c.* p. 100, Brazil; *A. scutellaris*, Harold, Col. Hefte, i. p. 82, Brazil; *A. opatrinus*, Harold, ibid., Bahia; *A. capitosus* (Chevr. MS.), Harold, *l. c.* p. 83, Columbia and Mexico; *A. perforatus* (Reiche, MS.), Harold, ibid., Columbia; *A. hispidus*, Harold, ibid., Venezuela and Caracas; and *A. picinus*, Har. Berl. ent. Zeits. 1867, p. 201, Chili.

Aphodius haagi, Becker, Bull. Soc. Nat. Mosc. xl. 1. p. 108, near Astrachan (a mere indication of colour and size).

Aphodius paivanus, Wollaston, Col. Hesp. p. 90, and *A. rendallii*, Woll. *l. c.* p. 91, Cape Verde Islands.

Aphodius gracilipes, Harold, Berl. ent. Zeitschr. 1867, p. 279, and *A. flavcolus*, Harold, *l. c.* p. 280, Chili.

Psammodius cruentus, Harold, *l. c.* p. 202, Chili.

Rhyssemus rugatus, Wollaston, *l. c.* p. 92, Cape Verde Islands.

Euparia costulata, Harold, Col. Hefte, i. p. 82, Brazil; and *E. argentina*, Har. idid. ii. p. 90, San Luis, Mendoza.

Orphnides.

Phœochrous? behrensii, sp. n., Horn, Trans. Amer. Ent. Soc. i. p. 163, California.

Trogides.

Trox (*Omorgus*) *baccatus*, Gerstäcker, Arch. f. Naturg. xxxi. p. 49, Zanzibar.

Trox nobilis, sp. n., Wollaston, Col. Hesp. p. 93, Cape Verde Islands (Fogo).

Glaphyrides.

Lichnanthe canina, sp. n., Horn, Trans. Amer. Ent. Soc. i. p. 164, Oregon.

Melolonthides.

J. Reiset has given (Comptes Rendus, lxv. pp. 1125–1138) a detailed account of the natural history of *Melolontha vulgaris*, with tables of the depths at which this insect is to be met with in its various states under different conditions of temperature, season, &c. He suggests late ploughing in fields much infested with the larvæ, as these rise towards the surface with the increase of temperature. Reiset's paper is accompanied by some remarks by Blanchard and Chevreul (*l. c.* pp. 1138–1140).

Melolontha vulgaris. Kawall (Stett. ent. Zeit. 1867, p. 119) notices a peculiar variety of this species.

Rhizotrogus suturalis (Luc). Ernest Cotty describes the mode in which he collected this and other species in Algeria. Mém. Soc. Linn. du Nord Fr. 1866, pp. 167–168.

Perty (Mitth. naturf. Ges. in Bern, 1867, p. 305, fig. 9) describes and figures a monstrous *Melol. vulgaris*, var. *hippocastani*, having the left intermediate leg reduced almost to half the normal length, and the tarsus with only three joints; and one of *Rhizotrogus ater*, with the left hind tarsus abbreviated (p. 306).

Girard (Ann. Soc. Ent. Fr. 4e sér. vi. pp. 571–576) describes and recommends the moveable fowl-houses invented by Giot, for the purpose of conveying poultry into the fields to destroy the larvæ of *Melolontha*.

New genera :—

Acratus, g. n., Horn, Trans. Amer. Ent. Soc. i. p. 165. Allied to *Chnaunanthus*; palpi long, last joint fusiform; antennæ 10-jointed; pygidium exposed. Sp. *A. flavipennis*, sp. n., Horn, *l. c.* p. 166, Arizona.

Plectrodes, g. n. Horn, Trans. Amer. Ent. Soc. i. p. 166. Allied to *Hypotrichia* (Lec.); tarsal claws dissimilar, the anterior with a long subbasal tooth; maxillary palpi long, last joint large, ovate, curved, deeply channelled outside. Sp. *P. pubescens*, sp. n., Horn, *l. c.* p. 167, California.

Cyphochilus, g. n., C. O. Waterhouse, Ent. M. Mag. iv. p. 141. Allied to *Leucopholis*; maxillæ short, truncate at apex, divided into three unequal lobes; labrum unequally divided by a notch; mentum bitruncate, the truncatures unequal; clypeus distinctly separated. Known sp. *Mel. candidus* (Oliv.) and *L. nivcosquamosa* (Blanch.). New sp. *C. tricolor*, C. O. Wat. *l. c.* p. 142, Siam; *C. farinosus* (Reiche, MS.), C. O. Wat. *l. c.* p. 143, North China; and *C. apicalis*, C. O. Wat. *l. c.* p. 144, China.

New species : —

Exopholis lacordairei, C. O. Waterhouse, *l. c.* p. 146, Borneo.

Pachydema decipiens, Fairmaire, Ann. Soc. Ent. Fr. 4e sér. vii. p. 396, Morocco.

Rhizotrogus. Fairmaire (Ann. Soc. Ent. Fr. 4e sér. vii.) describes the following new species of this genus from Morocco and Algeria :—*R.* (*Geotrogus*) *olcesii*, p. 396; *R. asperiventris*, p. 397; *R. nitidiventris* and *R. politus*, p. 398; and *R. tenuispina*, p. 399.

Dasydera cooperi, Horn, *l. c.* p. 164, California.

Coniopholis elephas, Gerstäcker, *l. c.* p. 40, and *C. melolonthoides*, Gerst. *l. c.* p. 41, Zanzibar.

Hypopholis conspurcata, Gerstäcker, *l. c.* p. 42, Zanzibar.

Schizonycha rorida, Gerstäcker, *l. c.* p. 43, Zanzibar.

Trochalus chrysomelinus, Gerstäcker, *l. c.* p. 43, *T. corinthia* and *T. sulcipennis*, Gerst. *l. c.* p. 44, Zanzibar.

Serica aberrans, Gerstäcker, *l. c.* p. 45, Zanzibar.

Rutelides.

Anisoplia austriaca (Herbst) occurred in 1867 in great quantities in the Banat, and inflicted much injury on the wheat-crops. Pelikan, Verh. zool.-bot. Ges. in Wien, xvii. pp. 693–696. See also Künstler, *l. c.* pp. 922–924.

Anomala (*Heteroplia*) *ancilla*, Gerstäcker, Arch. f. Naturg. xxxi. p. 45, *A. kersteni*, Gerst. *l. c.* p. 46, and *A. tendinosa*, Gerst. *l. c.* p. 47, Zanzibar.

Adoretus cephalotes, Gerstäcker, *l. c.* p. 47, and *A. jipensis*, Gerst. *l. c.* p. 48, Zanzibar.

Adoretus kœchlini, sp. n., Marseul, L'Abeille, iii. p. lxxx, Algeria.

Cotalpa ursina, sp. n., Horn, Trans. Amer. Ent. Soc. i. p. 168, California &c.

Dynastides.

Dipelicus (Hope). C. O. Waterhouse (Trans. Ent. Soc. Lond. v. pp. 531–533) recharacterizes this genus, which, he states, is closely allied to *Horonotus*, and indicates the characters of both sexes of *D. cantori* (Hope), *l. c.* p. 532, pl. 27. figs. 2 & 3, and of the male of *D.* (*Geotrupes*) *geryon* (Fab.), *l. c.* p. 533, pl. 27. fig. 4.

Alcidosoma, g. n. Castelnau, Rev. et Mag. de Zool. 1867, p. 113. Allied to *Chalcosoma*; tooth of interior of femora wanting; horn of anterior margin of pronotum wanting in ♂; coloration of *Megalosoma*. Sp. *A. siamensis*, sp. n., Cast. *l. c.* p. 114, pl. 14. figs. 1 & 2.

Stypotrupes candezei, sp. n., Vollenhoven, Tijdschr. v. Ent. 2nd ser. i. p. 222, pl. 11. figs. 1–4, Celebes.

Syrichthus clathratus, sp. n., Gerstäcker, Arch. f. Naturg. xxxi. p. 40, Zanzibar.

Cetoniides.

Oxythyrea stictica. The occurrence of this species near Manchester noticed by J. Hardy, Ent. M. Mag. iii. p. 280. Injurious to agriculture, see Künstler, Verh. zool.-bot. Ges. in Wien, xvii. pp. 924, 925.

New genera :—

Trymodera, g. n., Gerstäcker, Arch. für Naturg. xxxi. p. 34. Allied to *Plaesiorrhina*; pronotum small, declivous in front, sinuated behind; scapulæ very short; mesosternal process passing the coxæ, truncated at apex, subcompressed; legs slender, anterior and posterior tibiæ unidentate. Sp. *T. aterrima*, sp. n., Gerst. *l. c.* p. 34, Zanzibar.

Plectrone, g. n., Wallace, Proc. Ent. Soc. 1867, p. xciv. Allied to *Chalcothea*; differs in the form of the thorax and elytra, and in the remarkably spurred hind tibiæ of the ♂. Sp. *Macronota nigrocærulea* (Waterh.) and *M. tristis* (Westw.).

(*Sternoplus*, g. n., Wallace, *l. c.* p. xcvii. Type *Cetonia schaumii* (White). Not characterized.)

Euremina, g. n. (West.), Wallace, *l. c.* p. xcvii. Allied to *Macroma*; habitus of *Cremastocheilus* and of some *Cnemidæ*. Sp. *E. agnella*, sp. n. (Westw.), Wall. *l. c.* p. xcvii, Penang.

New species :—

Heterorhina. Diagnoses of the following new Malasian species, by A. R. Wallace, are published in Proc. Ent. Soc. Lond. 1867, p. xciii :—*H. florensis*, *malayana*, *nigrotestacea*, *borneensis*, *mitrata*, and *modesta*.

Clinteria bowringii, *malayensis*, and *flora*, Wallace, *l. c.* p. xciii, Malasia (diagnoses).

Agestrata parryi, Wallace, *l. c.* p. xciii, Borneo (diagn.).

Lomaptera. Wallace (*l. c.*) gives diagnoses of the following Malasian

species:—*L. striata, timoriensis, agni, esmeralda, ceramensis, cambodiensis, concinna, australis, inermis.*

Macronota. Wallace (*l. c.*) gives diagnoses of the following Malasian species:—*M. celebensis, castanea, nigerrima, vidua, guttulata, variegata, cervina, corticalis, thoracica, mouhotii, carbonaria, marmorata, annæ,* and *antennata.*

Schizorhina aruana, bouruensis, Wallace, *l. c.* p. xcv, Aru, Bouru (diagn.).

Anacamptorhina fulgida, Wallace, *l. c.* p. xcv, New Guinea (diagn.).

Euryomia. Wallace (*l. c.*) gives the diagnoses of the following new Malasian species:—*E. rustica, raja, trivittata, cincta, bella, celebensis, æthiessida, papua, lateralis, perviridis, tenera, aspera, moluccarum, vernalis, bowringii, sinuata, labecula, incerta, fulvipicta, cretata, aromatica, penanga.*

Cetonia. Wallace (*l. c.*) gives the diagnoses of the following new Malasian species:—*C. ciocolatina, inanis, celebica, dubia, obtusa, arrogans, porcina, solorensis, crassipes, C.? megaspilota, C.? irrorata.*

Euremina agnella, Wallace, *l. c.* p. xcvii, Penang (diagn.).

Plæsiorrhina specularis, Gerstäcker, Arch. für Naturg. xxxi. p. 33, Zanzibar.

Heteroclita (?) *corpulenta,* Gerstäcker, *l. c.* p. 35, Zanzibar.

Discopeltis lateralis, Gerstäcker, *l. c.* p. 36, Zanzibar.

Oxythyrea lucidicollis, Gerstäcker, *l. c.* p. 37, Zanzibar.

Cetonia (*Pachnoda*) *ephippiata,* Gerstäcker, *l. c.* p. 38, Zanzibar.

Cœnochilus appendiculatus, Gerstäcker, *l. c.* p. 39, Zanzibar.

Buprestidæ.

Chevrolat, in his revision of the Coleoptera of Cuba (Ann. Soc. Ent. Fr. 4ᵉ sér. vii. pp. 573–588) enumerates 30 species of this family, 11 of which are new. The known species described are:—

Chalcophora virginica (Drury) = *mariana* (Linn.) = *virginiensis* (Herbst); *Pelecopselaphus lanieri* (Chevr.); *Psiloptera aurifera* (Oliv.) = *amethystipes* (Lap. & Gory); *P. torquata* (Dalm.); *Dicerca tuberculata* (Chevr.) = *dumolini* (Lap. & Gory) + *scobina* (Chevr.), *consobrina* (Mels.); *Buprestis* (*Aneylochira lineata* (Fab.), var. *maculipennis* (Lap. & Gory); *B.* (*A.*) *decora* (Oliv.) = *salisburiensis* (Herbst); *B.* (*A.*?) *chalcoptera* (J. Duv.); *Cinyra multipunctata* (Oliv.); *Melanophila notata* (Lap. & Gory); *M. longipes* (Gory) = *immaculata* (Gory) = *appendiculata* (Lap. & Gory); *Anthaxia subsinuata* (Lap. & Gory); *Polycesta cubæ* (Chevr.); *P. angulosa* (J. Duv.); *Acmæodera pulcherrima* (J. Duv.); *A. cubæcola* (J. Duv.); *Actenodes auronotata* (Lap. & Gory), var. *sobrina* (Mann.); *Chrysobothris lepida* (J. Duv.); *C. impressa* (Fab.) = *fraterna* (Mann.) = *serripennis* (Lap. & Gory).

Anthaxia. Reiche (Ann. Soc. Ent. Fr. 4ᵉ sér. vi. pp. 577–580) remarks upon the synonymy of some of the species described in Marseul's Monograph of the *Buprestidæ*. *A. divina* (Reiche) = *diadema* (Fab.) if not distinct; *A. sponsa* (Kies.) = *anatolica* (Chevr.); *A. viminalis* (Cast.) = *scutellaris* (Gené); *A. chlorocephala* (Luc.) = *umbellatarum* (Fab.); *Bup. deaurata* (Gmel.) has the priority over *auricolor* (Herbst); *A. semicuprea* (Küst.) is a distinct species. Reiche adds that *Buprestis* (*Perotis*) *unicolor* (Oliv.) has the priority over *tarsata* (Herbst).

Fairmaire (Ann. Soc. Ent. Fr. 4ᵉ sér. vii. pp. 617–620) gives a list of 53 species of this family as inhabiting Chili, from which the following syno-

nymic indications may be derived:—*Psiloptera verrucifera* (Fairm.)=*prolongata* (L. & G.); *Anthaxia marginicollis* (Sol.)=*verecunda* (Erichs.).

Fairmaire also describes (*l. c.* pp. 621–629) several known species, namely:—*Psiloptera fastidiosa* (Fairm.), *Hypoprasis harpagon* (Fairm.), *Anthaxia subæqualis* (Fairm.), *Stigmodera cyanicollis* and *S. consobrina* Fairm.), and *S. chiliensis* (Guér.), and *Chrysobothris bothrideres* (Fairm.), and cites the characters of 4 species described by Philippi in the Stett. ent. Zeitung for 1860.

The following synonyms of Mendozan species described by Fairmaire are also given by him (*l. c.* p. 630):—*Psiloptera cupreo-fossa* (Fairm.)=*plagiata* (L. & G.); *P. germainii* (Fairm.)=*Cæculus americanus* (L. & G.); and *Tyndaris attenuatus* (Fairm.)=*Ptosima irrorata* (L. & G.)

Psiloptera xerces (Mars.)=*chlorana* (Lap.) according to Abeille de Perrin (Ann. Soc. Ent. Fr. 4e sér. vii. p. 69).

Dicerca ænea and *berolinensis*. Short notes on the larvæ by Kawall, Stett. ent. Zeit. 1867, p. 124.

Chrysochroa ephippigera (White) is referred by E. Saunders to *C. ocellata* (Fab.) as a variety (Trans. Ent. Soc. Lond. 3rd ser. v. p. 509, figured, pl. 25. fig. 1).

Coræbus bifasciatus (Oliv.). Abeille de Perrin describes the habits and transformations of this species, which is said by him to be injurious to oak trees (Ann. Soc. Ent. Fr. 4e sér. vii. pp. 66, 67).

Lampra conspersa (Fab.). Gernet describes and figures the larva of this species. Horæ Soc. Ent. Ross. v. p. 17, pl. 2. fig. 5.

Agrilus biguttatus (Fab.). Larva noticed by Kawall, Stett. ent. Zeit. 1867, p. 123.

Chrysobothris chrysostigma. Larva and habits noticed by Kawall, Stett. ent. Zeit. 1867, p. 123.

Gyascutus obliteratus (Lec.). Habits noticed by Horn, Proc. Ent. Soc. Phil. vi. p. 290.

Sphenoptera beckeri (Dohrn). Dohrn publishes further remarks upon the characters of this species, described by him in 1866. Stett. ent. Zeit. 1867, p. 144.

Acmæodera pulchra (Fab.). Ernest Cotty gives an account of his obtaining an abundance of this species from an old felled poplar trunk in Algeria. Mém. Soc. Linn. du Nord de Fr. 1866, pp. 168–169.

H. Fuss notices an example of *Conognathus variabilis* with 2 tarsi on the right intermediate tibia. Berl. ent. Zeits. 1867, p. 407.

Xenopsis, g. n., E. Saunders, Trans. Ent. Soc. Lond. 3rd ser. vol. v. p. 514. Allied to *Castalia*; eyes large; antennary cavities minute; elytra subtruncate at apex; tarsi dilated, joint 1 pyriform, 2 shorter, 3 and 4 very short. Sp. *X. lævis*, sp. n., Saund. *l. c.* p. 514, pl. 25. fig. 9, Penang.

New species:—

Chrysochroa similis, E. Saunders, Trans. Ent. Soc. Lond. 3rd ser. v. p. 429, pl. 22. fig. 3, Penang; *C. deyrollii*, E. Saund. *l. c.* p. 430, pl. 22. fig. 4, India; *C. parryi*, E. Saund. *l. c.* p. 430, pl. 22. fig. 5, Ceylon; *C. andamanensis*, E. Saund. *l. c.* p. 431, pl. 22. fig. 6, Andaman Islands.

Steraspis aurovittata (Hope, MS.), E. Saunders, *l. c.* p. 432, pl. 22. fig. 1, Sierra Leone.

Cyphogastra auripennis, E. Saunders, *l. c.* p. 432, pl. 22. fig. 2, Guam.
Chrysodema lambii, E. Saunders, *l. c.* p. 510, pl. 25. fig. 2, Penang.
Iridotænia obscura, E. Saunders, *l. c.* p. 511, pl. 25. fig. 3, Penang.
Pycilonota nigrofasciata, E. Saunders, *l. c.* p. 511, Penang.
Melobasis purpuriceps, E. Saunders, *l. c.* p. 512, pl. 25. fig. 6, Penang.
Buprestis marseuli, Garbiglietti, L'Abeille, iii. p. lxvii, Egypt.
Psiloptera costata, Fairmaire, Ann. Soc. Ent. Fr. 4e sér. vii. p. 622, Chili.
Psiloptera straba, Chevrolat, *l. c.* p. 575, Cuba.
Anthaxia ruginosa, Fairmaire, *l. c.* p. 624, Chili.
Anthaxia gerneti, Morawitz, Horæ Soc. Ent. Ross. iv. p. 35, near the Aral Lake.
Philanthaxia aureoviridis, E. Saunders, *l. c.* p. 513, Penang.
Stigmodera errata, Fairmaire, *l. c.* p. 627 (=*S. chiliensis*, Fairm. nec Guér.), and *S. monozona*, Fairm. ibid., Chili.
Castalia auromaculata, E. Saunders, *l. c.* p. 513, pl. 25. fig. 4, Penang.
Halecia verecunda, Chevrolat, Ann. Soc. Ent. Fr. 4e sér. vii. p. 573, and *H.? quadricolor*, Chevrolat, *l. c.* p. 574, Cuba.
Cinyra costulifera, Chevrolat, *l. c.* p. 579, and *C. sulcicollis*, Chevr. *l. c.* p. 580, Cuba.
Acmæodera marginenotata, Chevrolat, *l. c.* p. 583, Cuba.
Acmæodera. Marseul describes the following new species of this genus (Ann. Soc. Ent. Fr. 4e sér. vii.):—*A. bisseptem-guttata* (Laferté), p. 48, Columbia; *A. soudana*, p. 49, Soudan; *A. triangularis*, ibid., *A. stellata*, p. 50, *A. semi-marmorata* (Deyr.), p. 52, *A. apice-rubra* (Deyr.), p. 53, Lake N'Gami; *A. bellivestis*, p. 51, *A. subprasina*, p. 54, Abyssinia.
Ptosima chinensis, Marseul, *l. c.* p. 54, North China.
Sphenoptera solskyi, Becker, Bull. Soc. Nat. Mosc. xl. 1. p. 108, near Astrachan.
Chrysobothris tumida, Chevrolat, *l. c.* p. 585, Cuba.
Chrysobothris. Of this genus, E. Saunders (*l. c.*) describes the following new species from Penang:—*C. longula*, p. 515; *C. discicollis*, ibid. pl. 25. fig. 7; *C. forceiceps*, p. 516, pl. 25. fig. 8; and *C. similis*, p. 517.
Corœbus pascoei, E. Saunders, *l. c.* p. 518, pl. 25. fig. 5, and *C. analis*, E. Saund. *l. c.* p. 518, Penang.
Agrilus pauciguttatus, E. Saunders, *l. c.* p. 519, and *A. cupricauda*, E. Saund. *l. c.* p. 520, Penang.
Agrilus denticornis, Chevrolat, *l. c.* p. 586, Cuba.
Taphrocerus læsicollis, Chevrolat, *l.c.* p. 587, and *T. timidus*, Chevr. ibid., Cuba.
Leiopleura compactilis, Chevrolat, *l. c.* p. 588, Cuba.

Eucnemidæ.

Chevrolat (Ann. Soc. Ent. Fr. 4e sér. vii. pp. 588–596) describes 14 species of this family from Cuba, 7 of which are new. The known species are as follows:—*Drapetes nigripennis* (J. Duv.); *D. tunicatus* (Bonv.); *D. bicolor* (Cast.)=*cyanipennis* (J. Duv.); *D. azureus* (J. Duv.); *Dendrocharis* (*Galba*) *bombycina* (Guér.); *Hylochares lanieri* (Guér.); and *Nematodes* (*Metabletus*) *leprieuri* (Cast.).

New species:—

Fornax repulsus, Chevrolat, Ann. Soc. Ent. Fr. 4e sér. vii. p. 591, and *F. luridus* (Dej.), Chevr. ibid., Cuba.

Microrhagus pyrrhopus, Chevrolat, *l. c.* p. 592, Cuba.
*Dromæolus** *ischiodontoides*, Chevrolat, *l. c.* p. 592, Cuba.
*Adelothyreus** *quadrimaculatus*, Chevrolat, *l. c.* p. 593, Cuba.
Nematodes (*Emathion*) *rugicollis*, Chevrolat, *l. c.* p. 594, and *N.* (*Sphærocephalus*) *simulans*, Chevr. *l. c.* p. 595, Cuba.

Elateridæ.

Chevrolat (Ann. Soc. Ent. Fr. 4e sér. vii. pp. 596–614) describes 49 Cuban species of this family, of which only 5 are new. The known species are:—*Adelocera subcostata* (Cand.); *Calais primaria* (Cand.); *C. patricia* (Cand.); *Hemirhipus fascicularis* (Fab.); *Anoplischius depressipennis* (Cand.); *A. pyronotus* (Cand.); *A. venustus* (Dej., J. Duv.) = *seminiger* (Cand.); *A. sagranianus* (J. Duv.) = *lineipennis* (Cand.); *A. ruficeps* (Cand.); *Dicrepidius ramicornis* (Pal. B.); *Ischiodontus antennatus* (Cand.); *I. striatus* (Cand.); *I. oblitus* (Dej., Cand.); *Eudactylus schaumii* (Cand.); *E. cyanipennis* (Dej., Cand.); *Monocrepidius pinguis* (Cand.); *M. lividus* (De G.); *M. biforeatus* (Pal. B.); *M. memorabilis* and *stricturus* (Cand.); *Æolus dorsalis* (Say); *Æ. elegans* (Fab.); *Æ. binotatus* and *discicollis* (Cand.); *Æ. angulatus* (Fab.); *Heterodercs amplicollis* (Gyll.); *Anchastus rufiventris* (Chevr., Cand.); *A. rufescens* (Dej., Cand.); *Megapenthes sturmii* (Germ.); *M. opaculus* and *tæniatus* (Cand.); *Horistonotus badius* and *asthenicus* (Cand.) *Esthesopus pædicus* (Cand.); *E. hepaticus* (Erichs.); *Pyrophorus noctilucus* (Linn.); *P. hesperus*, *lychnus*, and *lychniferus* (Cand.); *P. havaniensis* (Lap.) = *coruscus* (Dej., Germ., Cand.); *Ludius havaniensis* (Cand.); *Glyphonyx gundlachii* (Cand.); *G. fusculus* (Erichs.); and *G. recticollis* (Say) = *pumilus* (Erichs., Cand.).

Cardiophorus exaratus (Erichs.). Abeille de Perrin describes the habits of this species, as observed by him near Marseilles. The males are more numerous than the females, and during the day scarcely any of the latter are to be seen; in the evening the females come out, and copulation takes place, when two or three males are often found united with one female. (Ann. Soc. Ent. Fr. 4e sér. vii. pp. 65–66.)

Agriotes gilvellus (Ziegl.). Perty (Mitth. naturf. Ges. in Bern, 1867, p. 306, fig. 7) describes and figures an example with a vesicular tubercle in each elytron.

Agriotes lineatus, &c. On the injury done by these insects to corn-crops, see Künstler, Verh. zool.-bot. Ges. in Wien, xvii. p. 925.

New species:—

Elater coccinatus, Rye, Ent. M. Mag. iii. p. 249, Britain.
Elastrus dolosus (Janson, MS.), Crotch, Proc. Zool. Soc. 1867, p. 386, pl. 23. fig. 8, Azores.
Dima perezii, Seidlitz, Berl. ent. Zeitsch. 1867, p. 178 (= *Celox dima*, Schauf.), Sierra Guadarrama.
Meristhus setarius, Chevrolat, Ann. Soc. Ent. Fr. 4e sér. vii. p. 596, Cuba.
Hemirhipus viduus, Chevrolat, *l. c.* p. 598, Cuba.
Monocrepidius sericatus, Chevrolat, *l. c.* p. 604, Cuba.
Horistonotus crux-nigra, Chevrolat, *l. c.* p. 610, Cuba.
Silesis scabriusculus, Chevrolat, *l. c.* p. 614, Cuba.

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* New genera, to be described by H. de Bonvouloir.

CERRIONIDÆ.

Ernest Cotty notices the occurrence of an undetermined species of *Cebrio* in the nest of a Bee-eater at Lalla-Maghrnia in Algeria. Mém. Soc. Linn. du Nord de Fr. 1866, p. 170.

Cebrio. Fairmaire (Ann. Soc. Ent. Fr. 4e sér. vii.) describes the following new species of this genus from Barbary and Algeria:—*C. luctuosus*, p. 400; *C. reichei* and *C. pilifrons*, p. 401; *C. costicollis* and *C. impressifrons*, p. 402; and *C. scutellaris*, p. 403.

DASCYLLIDÆ.

C. G. Thomson (Skand. Col. ix. p. 340) refers *Eucinetus* to his family *Catopidæ* (see p. 242).

Cyphon coarctatus and *fuscicornis* are ♂ and ♀ of the same species, according to Kiesenwetter, Berl. ent. Zeits. 1867, p. 407.

MALACODERMATA.

Lycides.

Eros affinis (Payk.) is figured from a British specimen by Rye, Ent. Ann. 1868, front. fig. 6.

Lampyrides.

Phosphænus hemipterus. Larva noticed by Kawall, Stett. ent. Zeit. 1867, p. 124.

J. von Becker publishes (Œfvers. Finska Vet.-Soc. Förh. viii. pp. 15–21) some observations on the luminous organ of *Lampyris splendidula*.

Luciola bimyxata, sp. n., Murray, Ann. & Mag. N. H. 3rd ser. xx. p. 321, Old Calabar.

Lampyris pharos, sp. n., Murray, *l. c.* p. 322, fig. 3 (p. 323), Old Calabar.

Telephorides.

Telephorus rufus. An example with abbreviated and deformed elytra is described by Perty, Mitth. naturf. Ges. in Bern, 1867, p. 306.

Desor records the occurrence of living larvæ of *Telephorus fuscus* on the snow near Grattes after a strong wind (see Record, 1866, p. 339). Bull. Soc. Sci. Nat. Bâle, vii. p. 514.

Telephorus darwinianus, sp. n., Sharp, Trans. Ent. Soc. Lond. 3rd ser. v. p. 436, Aberlady; *T. scoticus*, sp. n., Sharp, *l. c.* p. 437, Perthshire.

Ichthyurus. Fairmaire (Stett. ent. Zeit. 1867) describes six new species of this genus:—*I. semperi*, p. 114, Luzon; *I. forficuloides*, p. 115, Sarawak; *I. dohrnii*, ibid., Luzon; *I. scripticollis*, p. 116, Luzon; *I. bicaudatus*, ibid., Ceylon; and *I. inermis*, ibid., Ceylon.

Drilides.

Drilus. Schaufuss (Stett. ent. Zeit. 1867) describes the following new species of this genus:—*D. posticus*, p. 82, *D. bicolor*, p. 83, and *D. rectus*, p. 84, Syria; *D. frontalis*, ibid., Asia Minor; and *D. amabilis*, p. 85, Minorca.

Malacogaster nigripes, sp. n., Schaufuss, *l. c.* p. 85, Spain.

Melyrides.

Henicopus. The true home of this genus, according to Kiesenwetter (Berl.

Ent. Zeits. 1867, p. 109), is Spain, which possesses 22 of the 23 known European species, whilst 19, or perhaps 20, of these are peculiar to the Iberian peninsula. The occurrence of *H. calcaratus* near Rome is supposed by Kiesenwetter to be erroneously reported; and he assumes that *H. armatus* will be found in Spain, from its distribution in France and North Africa. Of the 19 exclusively Iberian species (incl. *H. calcaratus*) Kiesenwetter here gives a list, with diagnoses of the species described by Jacquelin Duval in the second part of his 'Glanures Entomologiques,' remarks upon other species, and descriptions of two new ones. *H. brachialis* (Duv.)=*praticola* (Waltl).

Dasytes. Of this genus Kiesenwetter (*l. c.* pp. 114–118) enumerates seven Spanish species, and characterizes, of known species, *D. nigropunctatus* (Küst.)=*asperulus* (Graells), *D. terminalis* (J. Duv.)=*Dasytes X* (Waltl) and his own *D. croceipes*. Of the 7 species 3 are new.

Dolichosoma. Of this genus Kiesenwetter enumerates 3 Spanish species (*l. c.* p. 119).

Lobonyx æneus. On the mode of occurrence of this species in Spain, see Kiesenwetter, *l. c.* p. 119.

Haplocnemus. Kiesenwetter (*l. c.* pp. 119–124) enumerates 12 Spanish species, 2 of which are described as new. The following known species are characterized:—*H. tumidus, cylindricus, albipilis, limbipennis,* and *pellucens* (Kies.), *montivagus* and *consobrinus* (Rosenh.).

Danacea. Kiesenwetter (*l. c.* pp. 125–127) enumerates 3 Spanish species of this genus, and describes *D. atripes* (Graells) and *D. nana* (Kiesenw.). The third species is new.

Amauronia hispana (Kiesenw.) is described by Kiesenwetter, *l. c.* p. 126.

Dolichosoma. Kiesenwetter (*l. c.* pp. 136–140) publishes a revision of the species of this genus, and indicates the occurrence among them of well-marked subordinate groups, which he distinguishes as subgenera, under the names of *Dolichosoma* (*lineare*, Rossi, *simile*, Br., *filum*, Fairm.), *Dolichophron* (*hartungii*, Woll., and 1 new species), and *Psilothrix* (*severum*, Kies., *femorale*, Moraw., *protensum*, Gené, *melanostoma*, Br., *smaragdinum*, Luc., *illustre*, Woll., *nobile*, Ill., and 1 new species). Kiesenwetter further indicates the division of the species of *Psilothrix* into 3 groups.

Charopus glaber (Kiesenw.)=*Troglops marginalis* (Waltl), according to Kiesenwetter, *l. c.* p. 134.

Attalus miniatocollis (Tarn.) described and figured by Crotch, Proc. Zool. Soc. 1867, p. 387, pl. 23. fig. 5.

According to Abeille de Perrin (Ann. Soc. Ent. Fr. 4e sér. vii. pp. 69–70), *Axinotarsus semilimbatus* (Fairm.)=*Malachius limbifer* (Kies.), and *Anthocomus lateplagiatus* (Fairm.) is a distinct species, allied to *A. terminatus* (Ménétr.).

Malachius æneus devours the larva of *Meligethes æneus*, according to Schmid, Zeitschr. ges. Naturw. xxx. p. 549. Said to injure corn-crops in Austria, by Künstler, Verh. zool.-bot. Ges. in Wien, xvii. pp. 926–928.

New species:—

Pecteropus milleri, Wollaston, Col. Hesp. p. 97, Cape Verde Islands (S. Vicente).

Anthocomus sellatus, Solsky, Horæ Soc. Ent. Ross. iv. p. 91, Sarepta.

Hedybius cæruleus, Murray, Ann. & Mag. N. H. 3rd ser. xx. p. 321, Old Calabar.

Henicopus perezi, Kiesenwetter, Berl. ent. Zeits. 1867, p. 111, Madrid; *H. privignus*, Kiesenw. *l. c.* p. 113, taf. 1. fig. 1, Sierra de Jaen.

Dasytes oculatus, Kiesenwetter, *l. c.* p. 115, Sierra de Jaen; *D. ærosus*, Kiesenw. *l. c.* p. 116, Pyrenees; and *D. subfasciatus*, Kiesenw. *l. c.* p. 118, Escorial.

Dasytes callosus, Solsky, *l. c.* p. 32, Samara.

Dasytiscus posticus, Solsky, *l. c.* p. 34, and *D. scutellaris*, Solsky, ibid., Algeria.

Dolichosoma (Psilothrix) splendidum, Schaufuss, Stett. ent. Zeit. 1867, p. 81, Mallorca; *D. (P.) ultramarinum*, Schauf. *l. c.* p. 82, Rhodes.

Dolichosoma cylindromorphum, Kiesenwetter, Berl. ent. Zeitschr. 1867, p. 138, pl. 1. fig. 8, Syria; *D. pharaonum*, Kiesenw. *l. c.* p. 139, pl. 1. fig. 9, Egypt.

Haplocnemus barnevillei, Kiesenwetter, *l. c.* p. 121, Spain; *H. aubei*, Kiesenw. *l. c.* p. 122, Spain.

Danacea lata, Kiesenwetter, *l. c.* p. 125, Andalusia.

Amauronia elegans, Kiesenwetter, *l. c.* p. 127, Spain.

Cleridæ.

Erymanthus horridus (Westw.). Murray identifies Thomson's *E. vesuvioides* with this species. Ann. & Mag. N. H. 3rd ser. xx. p. 319.

Apteroclerus, g. n., Wollaston, Col. Hesp. p. 98. Allied to *Dozocolletus* (Chevr.); last joint of antennæ scarcely longer than penultimate; prothorax transversely subquadrate, obtusely rounded at posterior angles. Sp. *A. fusiformis*, sp. n., Woll. *l. c.* p. 99, Cape Verde Islands (S. Vicente).

Microclerus, g. n., Wollaston, *l. c.* p. 99. Allied to *Thanasimus*, but prothorax and buccal organs nearly as in preceding genus. Sp. *M. dohrnii* and *M. euphorbiæ*, sp. n., Woll. *l. c.* p. 101, Cape Verde Islands.

Thanasimodes, g. n., Murray, Ann. & Mag. N. H. 3rd ser. xx. p. 319. Allied to *Thanasimus*; last joint of max. palpi securiform; prothorax subquadrate, its angles rounded; elytra long, posterior femora not reaching their apex. Sp. *T. metallicus*, sp. n., Murr. *l. c.* p. 320, fig. 2, Old Calabar.

Lymexylonidæ.

Murray (Ann. & Mag. N. H. 3rd ser. xx. pp. 317–318) discusses the systematic position of this family, which he regards as most nearly related to the group of genera including *Serropalpus*, *Phloiotroia*, &c. among the Heteromera.

Melittomma, g. n., Murray, Ann. & Mag. N. H. 3rd ser. xx. p. 314. Allied to *Hylocœtus* and *Atractocerus*; eyes very large; ocellus wanting; antennæ imbricated in ♂, subserrate in ♀; thorax elongate. Sp. *Hyl. brasiliensis* (Gyll.); *M. castaneum*, sp. n., Murray, *l. c.* p. 316 (*cum figg.*), Old Calabar.

Ptinidæ.

Ptinus. Kiesenwetter remarks (Berl. ent. Zeitschr. 1867, p. 127) that the Portuguese species of this genus described by Illiger have been greatly mistaken by later writers. He indicates that *P. lusitanicus* (Charp.)=*dilophus* (Ill.), pl. 1. fig. 2; *P. dilophus* (Boield.)=*lusitanus* (Ill.), and *P. lusitanus* (Boield.) is a ♀ of the same species; *P. alpinus* (Boield.)=*irroratus* (Kiesenw.); *P. germanicus* (Oliv. &c.)=*palliatus* (Perr.); *P. agricultor* (Rosenh.)

=*abbreviatus* (Boield.); *P. solitarius* (Rosenh.)=*obesus* (Luc.); *P. ruber* (Rosenh.) and *P. cisti* (Chevr.)=*spitzyi* (Boield.); *P. sycophanta* (Ill.) and *P. raptor* (Sturm)=*bidens* (Oliv.). Kiesenwetter also figures *P. coarcticollis* (Sturm), pl. 1. fig. 7.

Niptus globulus (Boield.) is distinct from *P. globulus* (Ill.), Kies. *l. c.* pl. 1. fig. 5.

Stein refers to the observations of Hensel upon the damage done to tobacco by *Pseudochina serricornis* (Fab.)=*Xyletinus testaceus* (Sturm). Berl. ent. Zeitschr. 1867, p. 211.

Kraatz remarks that *Xylet. testaceus* (Redt.) is distinct from the above-mentioned species (*l. c.* note).

F. Smith describes the ticking of *Anobium tessellatum*. Ent. M. Mag. iii. p. 279.

New species :—

Ptinus quercus, Kiesenwetter, Berl. ent. Zeits. 1867, p. 129, pl. 1. fig. 3, Pyrenees; *P. hirticornis*, Kiesenw. *l. c.* p. 130, pl. 1. fig. 4, Andalusia and Madrid.

Niptus constrictus, Kiesenwetter, *l. c.* p. 134, pl. 1. fig. 6, Sierra de Cordoba.

Microptinus echinatus, Wollaston, Col. Hesp. p. 103, Cape Verde Islands.

Sphæricus tuberculicollis, Wollaston, *l. c.* p. 105, Cape Verde Islands (S. Iago).

Piarus lowei, Wollaston, *l. c.* p. 106, Cape Verde Islands (Fogo).

Notiomimus lineatus, Wollaston, *l. c.* p. 108, Cape Verde Islands (S. Vicente).

Xyletinus tenebricosus, Solsky, Horæ Soc. Ent. Ross. v. p. 35, Koslow (East Russia).

Pseudochina obscura, Solsky, *l. c.* p. 36, Sarepta.

Bostrichidæ.

Apate. Murray (Ann. & Mag. N. H. 3rd ser. xx. p. 84) remarks upon the confusion existing with regard to the species of this genus, and characterizes the following known African species :—*A. terebrans* (Pall.), p. 84; *A. muricata* (Fab.), p. 85 (*cum fig.*); and *A. monacha* (Oliv.), p. 87. Murray also describes and figures *Bostrichus productus* (Imh.), *l. c.* p. 90.

Apate luctuosa (Oliv.)=*capucina* (Linn.), according to Abeille de Perrin, Ann. Soc. Ent. Fr. 4e sér. vii. p. 70.

New species :—

Apate degenera, Murray, Ann. & Mag. N. H. 3rd ser. xx. p. 87, Old Calabar.

Bostrichus protrudens, Murray, *l. c.* p. 88 (*cum figg.*), *B. brevicornutus*, Murr. *l. c.* p. 91 (*cum figg.*), and *B. brunneus*, Murr. *l. c.* p. 92, Old Calabar.

Bostrychus grayanus, Wollaston, Col. Hesp. p. 109, Cape Verde Islands (S. Iago).

Sinoxylon pubescens, Murray, *l. c.* p. 93, *S. fumatum*, Murr. *l. c.* p. 94, and *S. nitidipenne*, Murr. ibid., Old Calabar.

Cissidæ.

Cis punctulatus occurs at Rannoch. T. Blackburn, Ent. M. Mag. iv. p. 17.

Lyctus æqualis, Wollaston, Col. Hesp. p. 111, *L. jatrophæ*, Woll. *l. c.* p. 112, and *L. obsitus*, Woll. ibid., Cape Verde Islands.

MELASOMATA.

Zophosides.

ACHILLE DEYROLLE'S posthumous monograph of the Zophosides (Ann. Soc. Ent. Fr. 4e sér. vii. pp. 73–248) greatly enlarges our knowledge of the insects of this subfamily. It contains descriptions of a great number of new species; and the simple genus *Zophosis*, hitherto admitted in it, is here replaced by eight, as shown in the following table (p. 81). The types of all the new genera except one are described as new. There is a confusion in the naming of the genera, which will be noticed below :—

I. Claws equal.
  A. Posterior angles of prothorax salient, embracing the shoulders of the elytra.
    * Joint 1 of anterior tarsi nearly equal to the corresponding spur; joints 2–4 transverse.
      a. Mentum entire ..... 1. HOLOGENOSIS.
      b. Mentum emarginate ..... 2. ZOPHOSIS.
    † Joint 1 of anterior tarsi much longer than the corresponding spur; joints 2–4 elongate ..... 3. CHEIROSIS.
  B. Posterior angles of prothorax not embracing the base of the elytra; elytra fulvous or brown, with white spots .... 4. CALOSIS.

II. Claws unequal.
  A. Epipleural ridge entire.
    * Antennæ smooth.
      a. Body shortly oval; eyes moderately prominent above. 5. ANISOSIS [1].
      b. Body oblong-oval; eyes very prominent above. 6. OPHTHALMOSIS.
    † Antennæ beset with hairs; elytra suddenly narrowed at the extremity like a tail ..... 7. UROSIS [2].
  B. Epipleural ridge indistinct for the greater part of its length; elytra cordate, villose at the sides ..... 8. CARDIOSIS.

Zophosis. A. Deyrolle (*l. c.*) figures the following known species of this genus:—*Z. quadrilineata* (Oliv.), pl. 1. fig. 7; *Z. angolensis* (Erichs.), pl. 1. fig. 5; *Z. testudinaria* (Fab.), pl. 1. fig. 2; *Z. submetallica* (Sol.), pl. 1. fig. 6 (details of mouth); *Z. muricata* (Fab.), pl. 2. fig. 8.

New genera and species :—

Hologenosis, g. n., A. Deyrolle, *l. c.* p. 82. (See table above.) Sp. *H. laceratus* (Chevr.), sp. n., A. Deyr. *l. c.* p. 83, pl. 1. fig. 1, Cape of Good Hope.

Cheirosis, g. n., A. Deyrolle, *l. c.* p. 220. (See table above.) Sp. *C. ocata* (Fald.), pl. 2. fig. 12.

Calosis, g. n., A. Deyrolle, *l. c.* p. 222. (See table above.) Sp. *C. amabilis* (Boh.), sp. n., A. Deyr. *l. c.* p. 224, pl. 3. figs. 14, 15, South Africa.

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[1] *Onychosis* in the body of the paper.
[2] *Anisosis* in the body of the paper.

Onychosis, g. n., A. Deyrolle, *l. c.* p. 226. (*Anisosis* in table, p. 265.) Sp. *O. gracilipes* (Melly), sp. n., A. Deyr. *l. c.* p. 228, pl. 2. fig. 13 (♀, *Z. gibbus*, Melly), Benguela, Natal.

Ophthalmosis, g. n., A. Deyrolle, *l. c.* p. 229. (See table, p. 265.) Sp. *O. longipes*, sp. n., A. Deyr. *l. c.* p. 231, pl. 3. fig. 16, Guinea.

Anisosis, g. n., A. Deyrolle, *l. c.* p. 232. (*Urosis* in table, p. 265.) Sp. *A. caudatus*, sp. n., A. Deyr. *l. c.* p. 234, pl. 4. fig. 17, Benguela.

Cardiosis, g. n., A. Deyrolle, *l. c.* p. 235. (See table, p. 265.) Sp. *C. mouffleti*, sp. n., A. Deyr. *l. c.* p. 238, pl. 4. fig. 18, Cape Negro.

Zophosis. The following new species of this genus are described by A. Deyrolle (*l. c.*):—*Z. bocandei*, p. 107, Senegambia; *Z. osmanlis*, p. 114, Syria; *Z. orientalis*, p. 115, Syria, Dauria; *Z. truquii*, p. 116, Smyrna; *Z. faldermanni*, ibid., Persia; *Z. puella*, p. 120, Senegal; *Z. madagascariensis*, p. 121; *Z. praocioides*, p. 122, Zanzibar; *Z. caffer* (Eckl. & Zeyh.), p. 124, Cape of Good Hope; *Z. inexplicita* (Dej.), p. 125, Caffraria; *Z. dregei*, p. 127, Cape of Good Hope; *Z. angusticostis*, p. 130, Lake N'Gami; *Z. solieri*, p. 132, Lake N'Gami; *Z. gracilicornis*, p. 135, Cape of Good Hope; *Z. burkei*, p. 136, South Africa; *Z. chevrolatii*, p. 139, Cape of Good Hope; *Z. similis*, p. 140, Lake N'Gami; *Z. murrayi*, p. 141, Lake N'Gami; *Z. montrouzieri*, p. 142, Lake N'Gami; *Z. subænea*, p. 143, Lake N'Gami; *Z. subcordata*, p. 144, Lake N'Gami; *Z. rotundata*, p. 145, Lake N'Gami; *Z. mellyi*, p. 146, South Africa; *Z. difficilis*, p. 147, Lake N'Gami; *Z. obsoleta* (Winth.), p. 148, South Africa; *Z. castelnaudi*, p. 149, Lake N'Gami; *Z. lævigata*, p. 150, Cape of Good Hope; *Z. emilia*, p. 151, Caffraria; *Z. sinuatocollis*, p. 152, Lake N'Gami; *Z. balyi*, p. 153, Cape of Good Hope; *Z. dejeanii*, p. 154, Cape of Good Hope; *Z. candezei*, p. 155, Cape of Good Hope; *Z. impunctipennis*, p. 156, Cape of Good Hope; *Z. haagii*, p. 157, Cape of Good Hope; *Z. distincta*, p. 158, Natal; *Z. plicata*, p. 161, Cape of Good Hope; *Z. racinei*, p. 161, Cape of Good Hope; *Z. glabricollis*, p. 162, Cape of Good Hope; *Z. mniszechii*, p. 163, Lake N'Gami; *Z. sexcostata*, p. 165, West Africa; *Z. migneauxii*, p. 171, Arabia; *Z. armeniaca*, p. 172, Armenia; *Z. humberti*, p. 177, Cape?; *Z. miliaris*, p. 179, Cape?; *Z. parallela*, p. 180, pl. 1. fig. 3, and pl. 2. fig. 10 (details), South Africa?; *Z. nigroæneus*, p. 181, Cape; *Z. crypticoides*, p. 182, pl. 1. fig. 4, Caffraria; *Z. mæklini*, p. 186, Egypt; *Z. bohemanni*, p. 188, Egypt; *Z. sulcata* (Klug), p. 189, Egypt and Arabia; *Z. plicatipennis*, p. 190, Nubia; *Z. approximata* (Dej.), p. 195, Algeria; *Z. ghiliani*, p. 196, origin unknown; *Z. posticalis*, p. 199, Egypt; *Z. dilatata* (Erichs.), p. 208, Egypt, Syria, &c.; *Z. orbiculata* (Latr.), p. 209, Syria; *Z. marseuli*, p. 210, Algeria; *Z. lethierryi*, p. 211, Algeria; *Z. wollastonii*, p. 212, Caucasus; *Z. zuberi*, p. 213, Algeria; *Z. rotundata* (Sol.), p. 215, Egypt, Arabia; *Z. orbicularis* (Boh.), p. 216, pl. 2. fig. 9, Natal, Cape Negro; *Z. acuminata*, p. 217, Natal; *Z. benguelensis*, p. 218, Benguela; *Z. elongata*, p. 219, pl. 2. fig. 11, Benguela.

Adesmiides.

Lucas remarks on the white coloration of certain species of *Adesmia* and *Leucolæphus*, and on the variability of *Adesmia langii* (Guér.). Bull. Soc. Ent. Fr. 1867, p. lxxii.

Tentyriides.

Horn (Proc. Ent. Soc. Phil. vi. pp. 293–294) discusses the characters of

Usechus lacerta (Motsch.), which he refers to the subfamily *Tentyriidæ*, in the immediate vicinity of the *Zopherini*. He considers it to form the type of a new tribe, which he introduces into Leconte's classification as follows:—

Tibial spurs very minute.
Anterior coxæ widely separated.
Eyes transverse, finely granulated ..... *Zopherini.*
Eyes rounded, coarsely granulated ..... *Usechini.*
Anterior coxæ narrowly separated; antennæ 11-jointed.... *Stenosiini.*
Anterior coxæ contiguous; antennæ 10-jointed ..... *Dacoderini.*

Psammocryptus minutus (Tausch.) lives in society in human ordure. Becker, Bull. Soc. Nat. Mosc. xl. 1. p. 109.

Auchmobius infaustus (Lec.) and *Craniotus pubescens* (Lec.), noticed by Horn, Proc. Ent. Soc. Phil. vi. p. 291.

Oxycara. Wollaston (Col. Hesp.) describes the following new species of this genus from the Cape Verde Islands:—*O. ebenina*, p. 172, S. Vicente; *O. castanea*, ibid. (=*hegeteroides*, Woll. nec Erichs.), S. Vicente; *O. lævis*, p. 174, S. Nicolão; *O. cribrata*, p. 175, S. Iago; *O. similis*, ibid., Fogo; *O. irrorata*, p. 176, Brava; *O. curta*, p. 177, Fogo.

Zopherides.

G. H. Horn (Trans. Amer. Ent. Soc. i. pp. 159–162) gives descriptions of the species of *Zopherus* (Gray) inhabiting the United States. He enumerates six, of which he gives a table (*l. c.* p. 162); three of them are described a new.

Zopherus guttulatus, sp. n., Horn, *l. c.* p. 160, Texas; *Z. opacus*, sp. n., Horn, *l. c.* p. 161, Nevada; and *Z. gracilis*, sp. n., Horn, *l. c.* p. 162, Arizona.

Adelostomides.

Dacoderus striaticeps (Lec.) and *Araeoschizus costipennis* (Lec.), noticed by Horn, Proc. Ent. Soc. Phil. vi. p. 291.

Akisides.

Morawitz, in the introductory remarks to a revision of the species of *Akis* inhabiting Russia (Horæ Soc. Ent. Ross. iii. pp. 1–48), refers to numerous errors and imperfections in Kraatz's 'Revision der Tenebrioniden der alten Welt.' He indicates that Kraatz has neglected the sexual distinction furnished by the difference in the punctation of the abdomen in ♂ and ♀ of most, if not all, the *Akisides*, as pointed out by Solier, and remarks on the relation of the ribs on the elytra of many species to the pleuræ. With regard to extra-Russian species, Morawitz indicates that *Pimelia grossa* (Oliv.)=*Tenebrio grossus* (Linn.)=*P. grossa* (Fab.), and is from Africa according to Olivier, from Barbary according to Fabricius, and probably identical with *Morica octocostata* (Sol.), which in this case must bear the Linnean name; *Akis salzei* (Sol.)=*A. discoidea* (Quens.) var.; *A. otoës* (Fisch.)=*subterranea* (Dahl); *A. barbara* (Sol.) is probably distinct from *A. spinosa* (Linn.); and *A. terricola* (Ménétr.)=*spinosa* (Linn.). Morawitz finally discusses the genera *Cyphogenia* (Sol.) and *Sarothropus* (Kraatz), and their characters, and arrives at the conclusion that they cannot be maintained. Accordingly, in treating of the Russian species, he unites all under the genus *Akis*, employing

the names *Sarothropus* and *Cyphogenia* for subgeneric groups. Thus group I. SAROTHROPUS includes *A. depressa* (Zubk.) = *gibba* (Ménétr.); group II. LECHRIOMUS *A. limbata* (Fisch.), *A. lucifuga* (Adams) = *A. aurita* (Ménétr., Kr. nec Pall.), and a new species; group III. CYPHOGENIA *A. fuscata* (Fald.) + *rugipennis* and *sepulchralis* (Fald., Kr.), *A. chinensis* (Fald.); *A. gibba* (Fisch.) = *angustata* and *zablotzkii* (Zubk.), *A. aurita* (Pall.) = *truncata* (Gebl.) = *C. zablotzkii* (Kr.).

Akis bienerti, sp. n., Morawitz, *l. c.* p. 27, Herat; *A. cratii* *, sp. n., Morawitz, *l. c.* p. 40 (= *aurita*, Ménétr. = *C. truncata*, Kraatz nec Gebl.), Kisil-Kum Steppe and Lake Indersk.

Scaurides.

Scaurus variolosus, sp. n., Wollaston, Col. Hesp. p. 178, Cape Verde Islands (Fogo).

Blaptides.

Elcodes. The Californian species, when disturbed, elevate the hinder part of the body until they stand almost vertically. When handled, they emit an offensive oily fluid from the anus, which stains the fingers. Horn, Proc. Ent. Soc. Phil. vi. p. 202.

Blaps similis (Fab.). An example with the right hind tibia doubled and the accessory tibia furnished with 2 tarsi is noticed by H. Fuss, Berl. ent. Zeits. 1867, p. 407.

Asidides.

Asida rolphii, sp. n., Fairmaire, Ann. Soc. Ent. Fr. 4e sér. vii. p. 404, Morocco; *A. obsoleta*, sp. n., Fairm. *l. c.* p. 405, Algeria; *A. olcesii*, sp. n., Fairm. ibid., Morocco; *A. abrupta*, sp. n., Fairm. *l. c.* p. 406, Constantine.

Pimeliides.

Pimelia insignis, sp. n., Fairmaire, Ann. Soc. Ent. Fr. 4e sér. vii. p. 407, Mogador.

Molurides.

Sepidium uncinatum and *wagneri* (Erichs.). Ernest Cotty notices the mode of occurrence of these species in Algeria. Mém. Soc. Linn. du Nord de Fr. 1866, p. 171.

Sepidium tuberculatum (Klug). Perty (Mitth. naturf. Ges. in Bern, 1867, p. 307, and fig. 10) describes and figures an example with the left antenna cleft.

Pedinides.

Cenoscelis, g. n., Wollaston, Col. Hesp. p. 179. Allied to *Platyscelis* (?); last joint of labial palpi very broad, subhorizontal, elongate oval, flattened and tabular above, convex beneath; joint 1 of posterior tarsi very long, linear. Sp. *C. tibialis*, sp. n., Woll. *l. c.* p. 180, Cape Verde Islands.

Opatrides.

Melanocoma, g. n., Wollaston, Col. Hesp. p. 181. Allied to *Trichosternum*; prosternal lobe horizontal, thickened and a little produced behind; abdo-

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* See p. 203.

minal lobe rotundato-quadrate. Sp. *M. vestita*, sp. n., Woll. *l. c.* p. 182, Cape Verde Islands (Fogo).

Trichosternum nicolense, sp. n., Wollaston, *l. c.* p. 186, and *T. granulosum*, sp. n., Woll. ibid., Cape Verde Islands.

Opatrum clavipes, sp. n., Wollaston, *l. c.* p. 188, Cape Verde Islands.

Trachyscelides.

Anemia crassa, sp. n., Wollaston, Col. Hesp. p. 196, and *A. denticulata*, sp. n., Woll. *l. c.* p. 197, Cape Verde Islands.

Phaleriides.

Phaleria parallela, sp. n., Wollaston, Col. Hesp. p. 201, Cape Verde Islands.

Diaperides.

Frauenfeld notices the larvæ of *Bolitophagus agaricola* (Fab.) and *Diaperis boleti* (Linn.). Verh. zool.-bot. Ges. in Wien, xvii. p. 780.

Ulomides.

Hypophlæus ficicola, sp. n., Wollaston, Col. Hesp. p. 205, and *H. longicollis*, sp. n., Woll. *l. c.* p. 206, Cape Verde Islands (S. Iago).

Diaclina suffusa, sp. n., Wollaston, *l. c.* p. 207, Cape Verde Islands (S. Iago).

Tenebrionides.

Kraatz remarks (Berl. ent. Zeitschr. 1867, p. 394) on the European species of *Tenebrio* and *Menephilus*. He regards *T. transversalis* (Duft.) as =*picipes* (Herbst), with which *noctivagus* (Muls.) is also identical, thus reducing the European species to 4 (*T. opacus*, Duft., *obscurus*, Fab., *molitor*, Linn., and *picipes*, Herbst); *M. loripes* (Ill.) is the ♂ of *M. curvipes* (Fab.).

Cnodalonides.

Xanthothopeia, g. n., Mäklin, Acta Soc. Sci. Fenn. viii. p. 223. Allied to *Titæna*; mesosternum concave, not declivous or excised in front. Sp. *X. rufipennis*, sp. n., Mäklin, *l. c.* p. 223, Caffraria (=*Stenochia rufipennis*, Mus. Berol.).

Camarimena vicina, sp. n., Mäklin, *l. c.* p. 222, Burmah.

Helopides.

Apocrypha anthicoides (Esch.) and *Cononotus sericans* (Lec.). Noticed by Horn, Proc. Ent. Soc. Phil. vi. p. 292.

Helops azoricus, sp. n., Crotch, Proc. Zool. Soc. 1867, p. 390, Azores.

Strongyliides.

Mäklin (Acta Soc. Sci. Fenn. viii.) adopts the genus *Strongylium* in the extent given to it by Lacordaire. He characterizes the genus *Camarimena* (Motsch.) and 3 known species belonging to it (namely, *Str. variabile*, Walk., *Str. parabolicum*, Walk.= *C. ovicauda*, Motsch., and *Str. lævisculum*, Walk.), but regards it as belonging rather to the *Cnodalonides*, with a new genus (*Xanthothopeia*) here proposed by him. The genus *Strongylium* includes 266 species, by far the greater part of which are described as new. Of these no fewer than 189 are inhabitants of

America; *Africa* possesses 28, and the Asiatic continent and islands 43; whilst only 2 species are found in Australia, and 3 in the islands near New Caledonia. The genus *Oploptera* (Chevr.) receives the name of *Otocerus* (p. 484), the former being properly *Hoploptera*, which is already preoccupied for a genus of Birds. Details of the following known genera are figured (pl. 1) :—*Strongylium*, figs. 1–5 and 15; *Otocerus* (= *Oplopter*, Chevr.), figs. 7, 8; and *Phymatosoma*, figs. 13, 14.

Anomœarthrum, subg. n., Mäklin, *l. c.* p. 482. Intermediate between *Strongylium* and *Otocerus*; antennæ very long, slender, slightly compressed, joint 3 about half the length of 4, remainder elongate, inner apical angles not produced. Sp. *A. debile*, sp. n., Mäkl. *l. c.* p. 482, Ceylon; *A. gracile*, sp. n., Mäkl. *l. c.* p. 483, pl. 3. fig. 25, and pl. 1. fig. 6 (antenna), Caffraria.

Epiplecta, g. n., Mäklin, *l. c.* p. 498. Allied to *Strongylium*; antennæ not elongated, robust, joint 3 obconic, much narrower than 4, which is longer than broad, gradually dilated to apex, 5–10 broader than long, compressed. Sp. *E. maculata*, sp. n., Mäkl. *l. c.* p. 499, pl. 4. fig. 27, and pl. 1. fig. 9 (antenna), Cayenne (= ? *Stenochia rugipennis*, Dej.).

Aspidosternum, g. n., Mäklin, *l. c.* p. 500. Allied to *Strongylium*; antennæ robust, joint 3 nearly twice as long as 4, 4–9 subquadrate, a little longer than broad, 10 slightly dilated towards apex, 11 much longer than broad; prosternum very wide between coxæ, dilated and truncate behind. Sp. *Tenebrio cyaneus* (Fab.) = *Helops metallicus* (Fab.).

Cœlolophus, g. n., Mäklin, *l. c.* p. 502. Allied to preceding; antennæ slender, joint 3 about one-half as long again as 4, 8–11 slightly elongate. Sp. *C. schaumii*, sp. n., Mäkl. *l. c.* p. 502, pl. 1. fig. 10 (antenna), and *C. bicarinatus*, sp. n., Mäkl. *l. c.* p. 503, pl. 4. fig. 28, Ceylon.

Elasmocera, g. n., Mäklin, *l. c.* p. 504. Allied to preceding; antennæ somewhat robust, joint 3 shorter than 4, 5–7 wider, 8–11 strongly dilated and compressed. Sp. *E. dentipes*, sp. n., Mäkl. *l. c.* p. 505, pl. 4. fig. 29, and pl. 1. fig. 11 (antenna), Brazil.

Lophocnemis, g. n., Mäklin, *l. c.* p. 505. Allied to preceding; antennæ long, joint 3 one-half longer than 4, 4–6 slightly elongate, 7 dilated at apex, 8–10 much wider and compressed, 11 compressed, longer than broad; femora subclavate, excavated beneath near apex; posterior tibiæ crested before middle. Sp. *L. amabilis*, sp. n., Mäkl. *l. c.* p. 506, pl. 4. fig. 30, and pl. 1. figs. 12 & 16 (antenna and post. leg), Philippine Islands.

Otocerus (= *Oploptera*, Chevr.). Of this genus Mäklin (*l. c.*) describes the following new species :—*O. flavipennis* (Buq., Dej.), p. 486, *O. quinquelineatus*, p. 487; *O. flavolineatus*, p. 488, *O. semiviridis*, ibid., *O. nigriventris*, p. 489, *O. rufescens*, p. 490, *O. squalidus*, p. 491, *O. blanchardi*, ibid., *O. lucasi*, p. 492, *O. scapularis*, p. 493, and *O. quadriimpressus*, p. 494, pl. 3. fig. 26, from Brazil; *O. validicornis*, p. 495, and *O. superbus*, ibid., Cayenne; and *O. versicolor*, p. 496, Brazil and Cayenne.

Phymatosoma vesiculosum, Mäklin, *l. c.* p. 508, pl. 4. fig. 31, and pl. 1. fig. 14 (antenna), Java; *P. tuberosum*, Mäkl. *l. c.* p. 509, Borneo.

Strongylium. Of this genus Mäklin (*l. c.* pp. 225–479) describes 266 species, of which 218 are described as new, or under the MS. names of other authors. The citation of all these names would be of little service, as every one working upon these insects will be compelled to consult Mäklin's memoir.

The geographical distribution of the species is indicated above. The following species are figured :—*S. sallei*, pl. 2. fig. 17; *S. dohrnii*, fig. 18; *S. gigas*, fig. 19; *S. angusticolle*, fig. 20; *S. ambiguum*, fig. 21; *S. conicicolle*, pl. 3. fig. 22; *S. westermanni*, fig. 23; and *S. gravidum*, fig. 24.

Cistelidæ.

Prionychus ater. Transformations noticed by Kawall, Stett. ent. Zeit. 1867, p. 124.

Mycetochares bipustulata. Kawall (ibid.) also notices this species.

Omophlus lepturoides (Fab.), injurious to corn-crops. See Künstler, Verh. zool.-bot. Ges. in Wien, xvii. p. 928.

Heliotaurus rolphii, sp. n., Fairmaire, Ann. Soc. Ent. Fr. 4e sér. vii. p. 408, Morocco.

Melandryidæ.

Dircæa revelierii (Muls.)=*mollis* (Graells), and *Conopalpus gypsiventris* (Graells)=*carinirostris* (Schönh.), according to Seidlitz, Berl. ent. Zeits. 1867, p. 431.

Melandrya canaliculata. Larva found in rotten hazels. Kawall, Stett. ent. Zeit. 1867, p. 124.

Pedilidæ.

Pseudoscraptia, g. n., Wollaston, Col. Hesp. p. 214. Allied to *Scraptia*? eyes deeply emarginate in front; scutellum rather large; abdomen of 6 (?) segments; joint 1 of posterior tarsi very long, last joint shorter than penultimate. Sp. *P. dimidiata*, sp. n., Woll. *l. c.* p. 215, Cape Verde Islands (S. Antão).

Xylophilus gravidicornis, sp. n., Wollaston, *l. c.* p. 216, Cape Verde Islands (S. Iago).

Anthicidæ.

Anthicus salinus, sp. n., G. R. Crotch, Trans. Ent. Soc. Lond. 3rd ser. v. p. 439, Lymington and Gravesend.

Anthicus reductus, sp. n., Wollaston, Col. Hesp. p. 221, Cape Verde Islands (S. Iago).

Anthicus thyreocephalus, sp. n., Solsky, Horæ Soc. Ent. Ross. iv. p. 93, Sarepta.

Pyrochroidæ.

Snellen van Vollenhoven publishes a posthumous note by J. Wttewaal on the pupa of *Pyrochroa rubens*. Tijdschr. v. Ent. 2de ser. ii. pp. 20–22, pl. 1. fig. 1–6.

Pyrochroa pectinicornis. Larva noticed by Kawall, Stett. ent. Zeit. 1867, p. 123.

Mordellidæ.

Mordella duodecimpunctata (Rossi). Kawall notices the lava, found in rotten birches. Stett. ent. Zeit. 1867, p. 123.

Anaspis brevicornis, sp. n., Wollaston, Col. Hesp. p. 213, Cape Verde Islands (Fogo).

Silaria ochracea, sp. n., Stierlin, Mitth. schw. ent. Ges. ii. p. 223, Sarepta.

Stylopidæ.

Mäklin (Œfvers. Finska Vet.-Soc. Förh. viii. pp. 84–92), in recording

the occurrence of a Stylopized *Andrena* in Finland, gives a general account of the history of the Strepsiptera, and discusses their position in the system. He takes no notice of Gerstäcker's opinion on the latter subject.

L. von Heyden publishes (Berl. ent. Zeitschr. 1867, p. 398) some observations on the occurrence of species of *Xenos* in exotic Hymenoptera. He has detected larvæ in *Eumenes tinctor* (Christ.), *E. fenestralis* (Sauss.), and *Odynerus chloroticus* (Spin.), and possesses two specimens of a *Xenos* bred from the abdomen of the North American *Sphex ichneumoneus* (Linn.). The latter are not well enough preserved to allow them to be described, but they are about one-half larger than *X. peckii* (Germ.), which lives in *Polistes fuscata*.

F. Smith (Proc. Ent. Soc. 1867, p. lxxxviii) notices the occurrence of a species of *Xenos* (?), parasitic on *Paragia decipiens* (Shuck.), in South Australia.

G. A. J. Rothney (Ent. M. Mag. iii. p. 235) notices a case of a male *Stylops* emerging from an *Andrena* five months after the death of the latter.

Meloidæ.

Cantharis vesicatoria. Fermouze has published an inaugural thesis (see p. 207) on this Insect, in which he briefly describes its natural history, and enters at greater length upon its pharmaceutical history and properties. He also notices the Insects and Acari which live in the Cantharides in the shops. Of the latter he enumerates *Tyroglyphus longior* (Gerv.), *T. siculus*, sp. n., *Glyciphagus cursor* (Gerv.), *G. spinipes* (Koch), and *Cheyletus eruditus* (Lat.). In his plate 1 he represents the insect with its young larva and some of the Coleoptera which feed upon the dried Cantharides. The remaining plates are devoted to the Acarina.

On the synonymy of *Mylabris fuesslini*, see Bull. Soc. Ent. Fr. 1867, pp. lxi–lxii.

F. Löw notices the occurrence of the minute young larvæ of *Meloë* upon *Andrena nitida* (K.), and also, on the authority of Bauer, on hairy flies (*Merodon, Microdon, Volucella*, &c.). Verh. zool.-bot. Ges. in Wien, xvii. p. 749.

Phodaga alticeps (Lec.). Habits noticed by Horn, Proc. Ent. Soc. Phil. vi. p. 293. Horn (*l. c.* p. 296) indicates the differences between the ♂ and ♀ of this species, and figures the head and legs of the ♂.

The vesicant Beetles (*Lytta, Epicanta*, &c.) of California live chiefly on species of *Astragalus*. *Lytta vulnerata* occurs on composite plants. Horn, Proc. Ent. Soc. Phil. vi. p. 292.

Cysteodemus armatus (Lec.). Habits noticed by Horn, Proc. Ent. Soc. Phil. vi. p. 292.

Tegrodera erosa (Lec.). Habits noticed by Horn, ibid.

Mylabris 20-*punctata* (Linn.). Perty describes an example with the left antenna abbreviated and deformed. Mitth. naturf. Ges. in Bern, 1867, p. 306.

Curculionidæ.

Seidlitz (Berl. ent. Zeits. 1867, pp. 431–434) indicates the following synonyms among described species of this family:—*Cneorhinus gracilis* (C. Bris.) = *dispar* (Graells); *C. badnyi* (C. Bris.) = *carinirostris* (Boh.); *Stropho-*

somus fagi (Chevr.)=var. *coryli* (Fab.); *Brachyderes alboguttatus* (Chevr.) =*gracilis* (Schönh.); *Metallites punctulatus* (C. Bris.)=*Homapterus affinis* (Chevr.); *Myllocerus hispanus* (Chevr.)=*Peritelus gougeleti* (Seidl.); *Chlocbius sulcirostris* (Hochh.)=*psittacinus* (Schönh.); *Pissodes strobili* (Redt.) *validirostris* (Gyll.); and *Bradybatus fallax* (Gerst.)=*Anthonomus elongatulus* (Schönh.).

Brachyderides.

Strophosomus. Seidlitz (Berl. ent. Zeitschr. 1867, p. 179) remarks that the knowledge of the species of this genus has again become confused, partly in consequence of Thomson (in his Skand. Col.) having described the true *S. coryli* (Fab.) as *obesus* (Marsh.) and *vice versâ*, and partly from errors in Chevrolat's revision of the species (Mag. de Zool. 1865). He accordingly gives a tabular synopsis of the European species (*l. c.* pp. 180–182), of which he admits 17, including 5 new ones here described. *S. fagi* (Chevr.) is indicated (p. 183, note) as doubtfully distinct from *S. crinaceus* (Chevr.), of which a detailed description is given.

Sciaphilus. Seidlitz (*l. c.* p. 432) refers *Chiloneus siculus* and *ionicus* to this genus, in which they form, with *S. contrarius* and *muricatus*, a natural group. *Eudipnus* (Thoms.) forms a subordinate group of this genus.

Schaufuss remarks (Col. Hefte, ii. p. 21), that *Metallites cristatus* (Graëlls) = *Sciaphila carinula* (Oliv.), and describes the structure of its funiculus.

Amomphus cottyi (Luc.). Ernest Cotty records his search for this species in Algeria. Mém. Soc. Linn. du Nord de Fr. 1866, p. 173.

Sitones linecllus (Gyll.), its occurrence in Northumberland noticed by T. J. Bold, Ent. M. Mag. iv. p. 82.

Sitones meliloti (Walt.). Habits noticed by Bold, Ent. M. Mag. iv. p. 82.

New genera :—

Dinas, g. n., Wollaston, Col. Hesp. p. 132. Allied to *Foucartia* and *Platytarsus*; femora toothed beneath; rostrum short, subparallel, flattish above, scrobes deep, curved, obliquely drawn far in front of anterior margin of eye. Sp. *D. rugicollis*, Woll. *l. c.* p. 133, *D. elliptipennis*, Woll. *l. c.* p. 134, *D. angustula*, Woll. *l. c.* p. 135, *D. obsita*, Woll. *l. c.* p. 136, and *D. sitonæformis*, Woll. *l. c.* p. 137, Cape Verde Islands.

Asynonychus, g. n., Crotch, Proc. Zool. Soc. 1867, p. 388. Allied to *Brachyderes*; claws free; anterior tibiæ serrate. Sp. *A. godmanni*, sp. n., Crotch, *l. c.* p. 389, pl. 23. fig. 9, Azores.

Neocnemis, g. n., Crotch, *l. c.* p. 389. Allied to *Strophosomus*; tibiæ with a strong spine within at apex; corbeilles not well defined, ciliate at the edge. Sp. *N. occidentalis*, sp. n., Crotch, *l. c.* p. 389, pl. 23. fig. 7, Azores.

Hypsometopus, g. n. (Jek.), Kirsch, Berl. ent. Zeitschr. 1867, p. 222. Rostrum longer than head, narrowed in middle, dilated in front, scrobes almost superior, broad, suddenly curved down, remote from the eyes; antennæ terminal, scape thickened at apex, joints 1 & 2 of scape elongate, 3 & 4 very short, obconic; femora with a minute tooth, corbulæ open, not cavernous, Sp. *H. inquinatus* (Schönh.), Kirsch, *l. c.* p. 223, Bogotá (= *H. sus*, Jek.).

Menetypus, g. n., Kirsch, *l. c.* p. 233. Allied to *Hadromerus*; rostrum as long as head, a little narrower, quadrangular, flat above; scape slender; funiculus with joints 1 & 2 obconic, 3–7 globose, 7 largest; club oval, acute, triarticulate. Sp. *M. hadromeroides*, sp. n., Kirsch, *l. c.* p. 234, Bogotá.

Bothriodontes, g. n., Kirsch, *l. c.* p. 241. Allied to *Synthlibonotus*; rostrum one half longer than head, narrower, quadrangular, slightly dilated towards apex, a small oblong pit on each side before the eyes acutely incised on each side when looked at vertically. Sp. *B. squalidus*, sp. n., Kirsch, *l. c.* p. 243, Bogotá.

Chamælops, g. n., Kirsch, *l. c.* p. 235. Allied to *Platyomus*; rostrum short, attenuate at apex; funiculus slender, joints elongato-obconic, 2 longest; eyes oblong. Sp. *C. minutus*, sp. n., Kirsch, *l. c.* p. 236, Bogotá.

Prepodellus, g. n., Kirsch, *l. c.* p. 239. Allied to *Exophthalmus*; rostrum obtuse-angled behind, dilated before insertion of antennæ, not emarginate at apex; scrobes remote from eyes; antennæ subterminal; joints 1 & 2 of funiculus shortly obconic, remainder globose; last segment of abdomen transverse. Sp. *P. nigriclavis*, sp. n., Kirsch, *l. c.* p. 240, and *P. ruficornis*, sp. n., Kirsch, ibid., Bogotá.

New species:—

Cneorhinus setarius, Fairmaire, Ann. Soc. Ent. Fr. 4e sér. vii. p. 408, Morocco.

Strophosomus. Seidlitz (Berl. ent. Zeitschr. 1867) describes the following new species of this genus:—*S. picticollis*, p. 183, *S. constrictus*, ibid., Andalusia; *S. alticola*, p. 184, Sierra Nevada; *S. monachus*, ibid., Granada; and *S. albolineatus* (Beck. MS.), ibid. note, Sarepta.

Sciaphilus hampei, Seidlitz, *l. c.* p. 432, Transsylvania; *S. rasus*, Seidl. *l. c.* p. 433, Dalmatia.

Brachyderes scutellaris, Seidlitz, *l. c.* p. 185, Cordova.

Sitones ononidis, Sharp, Trans. Ent. Soc. Lond. 3rd ser. v. p. 438, Herne Bay.

Thylacites rolphii, Fairmaire, *l. c.* p. 400, Morocco.

Thylacites longipilis, Seidlitz, *l. c.* p. 186, Western Spain; *T. pusillus*, Seidl. ibid., Sierra Nevada.

Amphideritus rugicollis, Kirsch, Berl. ent. Zeitschr. 1867, p. 223, and *A. squamosus*, Kirsch, *l. c.* p. 224, Bogotá.

Mimographus. Kirsch (*l. c.*) describes the following new species of this genus from Bogotá:—*M. amandus* (Buq. MS.), p. 225; *M. jekelii*, p. 226; *M. viridanus*, ibid.; *M. lugens*, p. 227; *M. mœstus*, ibid.; *M. argutulus* (Buq. MS.), p. 228; *M. ardesiacus* (Jek. MS.), p. 229; *M. micans*, ibid.; *M. rufipes*, p. 230; *M. suturalis*, ibid.; *M. dentipes*, p. 231.

Hadromerus ruficrus, Kirsch, *l. c.* p. 232, and *H. impressicollis*, Kirsch, *l. c.* p. 233, Bogotá.

Compsus deplanatus, Kirsch, *l. c.* p. 237, and *C. bituberosus*, Kirsch, ibid., Bogotá.

Exophthalmus crassicornis, Kirsch, *l. c.* p. 238, Bogotá.

Otiorhynchides.

Schaufuss remarks (Col. Hefte, ii. pp. 21–22) that *Otiorhynchus echinatus* and *foveicollis* were described by Hochhuth in the Moscow Bulletin, and that the same author described an *O. elongatus* in 1847. Schaufuss proposes the name of *O. francolinus* for Stierlin's *O. elongatus* (*l. c.* p. 22).

Laparocerus azoricus (Drouet). This species is described and figured by Crotch, Proc. Zool. Soc. 1867, p. 388, pl. 23. fig. 6.

Omias. Gautier des Cottes (Mitth. schweiz. ent. Gesellsch. ii. pp. 161–162) remarks upon several errors in respect of species of this genus in De Marseul's last Catalogue.

Otiorhynchus ligustici (Linn.) noticed as injurious to the vine, by Künstler, Verh. zool.-bot. Ges. in Wien, xvii. pp. 948–950.

Otiorhynchus gastonis and *O. henonii*, spp. nn., Fairmaire, Ann. Soc. Ent. Fr. 4e sér. vii. p. 410, Algeria.

Misomermus canaliculatus, sp. n., Schaufuss, Col. Hefte, ii. p. 20, Mallorca.

Phyllobius hirtus and *P. irroratus*, spp. nn., Seidlitz, Berl. ent. Zeitschr. 1867, p. 187, Andalusia.

Rhytirhinides.

Gronops pallidulus, Wollaston, Col. Hesp. p. 131, Cape Verde Islands (S. Vicente).

Molytides.

Liosomus robustus, sp. n., Seidlitz, Berl. ent. Zeitschr. 1867, p. 187, Andalusia.

Scythropides.

Scythropus dentipes, sp. n., Seidlitz, Berl. ent. Zeitschr. 1867, p. 185, Andalusia.

Hyperides.

Capiomont has published (Ann. Soc. Ent. Fr. 4e sér. vii. pp. 417–560) a monographic revision of this group. He restores the genus *Macrotarsus* (Schönh.) placed among the Cylindrorhinides by Lacordaire. He describes the structure of the insects composing this group at great length, indicates the species of which the larvæ have been observed, and discusses the views of various authors as to their classification and affinities. The *Hyperides* are divided by Capiomont into 2 subtribes, characterized as follows:—

1. *Cépurides.* Metathoracic episterna broad, much dilated at their anterior extremity (⅓ total length); mesothoracic epimera large.

2. *Hypérides vrais.* Metathoracic episterna narrow, not much dilated anteriorly (less than ⅓ total length); mesothoracic epimera but slightly developed.

The *Cépurides* include the following genera:—

1. Joint 7 of funiculus not confounded with the club; suture of elytra not gibbous before the middle.

A. Pronotum tapezoidal..... 1. *Cepurus* (Schönh.).

B. Pronotum not trapezoidal, usually transverse.

1. Tibiæ of moderate length.

a. Rostrum not twice as long as thick, cylindrical.

* Last abdominal segment in ♂ as long as 2 preceding together. 2. *Cephalalges* (Schönh.).

† Last abdominal segment in ♂ shorter than 2 preceding together. 3. *Isorhinus*, g. n.

b. Rostrum at least twice as long as broad, widened at the tip.

* Joint 2 of antennæ longer than 1.
4. *Chlorophilus*, g. n.
† Joint 2 of antennæ never longer than 1.
a. Pronotum strongly transverse, much rounded at the sides, declivous in front..... 5. *Larinosomus*, g. n.
β. Pronotum a little wider than long, not declivous in front, scarcely rounded at the sides.
6. *Phelypera*, g. n.
2. Tibiæ very long ..... 7. *Eurychirus* (Wat.).
II. Joint 7 of funiculus confounded with the club, which seems to consist of 5 joints; suture gibbous before the middle.
8. *Tylopterus*, g. n.

Of the genera of *Hypérides vrais*, Capiomont gives the following synoptical table (*l. c.* pp. 474–475):—

I. Antennæ subterminal; rostrum clearly canaliculate above throughout its length ..... 1. *Alophus* (Schönh.).
II. Antennæ submedian or median; rostrum never canaliculate above throughout.
A. Rostrum somewhat suddenly dilated at extremity; pterygia slightly indicated..... 2. *Lepidophorus* (Kirby).
B. Rostrum never suddenly dilated at extremity; no pterygia.
1. Branches of mesothoracic epimera forming at their union a very open angle.
a. Joints of posterior tarsi compressed, fringed at the edges, not spongy beneath ..... 3. *Macrotarsus* (Schönh.).
b. Joints of posterior tarsi never compressed, always spongy beneath.
* Eyes rounded, scape of antennæ passing their upper margin.
4. *Bubalocephalus*, g. n.
† Eyes oval or oblong, scape of antennæ never attaining their upper margin ..... 5. *Hypera* (Germ.).
2. Branches of mesothoracic epimera forming at their union nearly a right angle.
a. Eyes oval or oblong.
* Funiculus of 7 joints ..... 6. *Phytonomus* (Schönh.).
† Funiculus of 6 joints..... 7. *Limobius* (Schönh.).
b. Eyes rounded..... 8. *Coniatus* (Germ.).

The genus *Alophus* is considered by Capiomont to belong rather to the *Barynotides*; its species are not described by him. *Phytonomus* he thinks rather an unnatural assemblage; and *Hypera* (the last here treated in detail) is divided by him into 4 subgenera, which he names *Pachypera*, *Hypera* (prop.), *Brachypera*, and *Pseudhypera*. The plates (11 & 12) accompanying this memoir contain details of the various genera.

Phytonomus polygoni. The larva feeds on the knots of carnations, &c. Kawall, Stett. ent. Zeit. 1867, p. 123.

New genera:—

Isorhinus, g. n., Capiomont, *l. c.* p. 443. (See table, p. 275.) Sp. *Phytonomus confusus* (Chevr., Schönh.); *I. fusco-maculatus*, sp. n. (Chevr.), Cap. *l. c.* p. 444, Bolivia and Yucatan; *I. chevrolati*, sp. n., Cap. *l. c.* p. 445, Mexico.

Chlorophilus, g. n. (Dej.), Capiomont, *l. c.* p. 446. (See table above.) Sp.

Coniatus nigro-punctatus and *rubro-vittatus* (Gory); *C. trifasciatus*, sp. n., Cap. *l. c.* p. 449, Madagascar; *C. lacordairei*, sp. n., Cap. *l. c.* p. 450, Cochin China.

Larinosomus, g. n., Capiomont, *l. c.* p. 451. (See table, p. 276.) Sp. *L. nebulosus* (Dej.), Cap. *l. c.* p. 453, pl. 12. fig. 13, *L. propinquus*, Cap. *l. c.* p. 454, *L. nigrosparsus* (Chevr.), Cap. *l. c.* p. 455, Brazil; *L. scutellaris* (Chevr.), Cap. *l. c.* p. 456, Patagonia; *L. analis*, Cap. *l. c.* p. 457, Cayenne.

Phelypera, g. n. (Jekel), Capiomont, *l. c.* p. 458. (See table, p. 276.) Sp. *Phyton schuppeli* and *distigma* (Schönh.). N. sp. *P. cervina* (Dej.), Cap. *l. c.* p. 460, Monte Video; *P. mœsta* (Chevr.), Cap. *l. c.* p. 461, Brazil; *P. griseofasciata* (Dej.), Cap. *l. c.* p. 462, Brazil; *P. dorsonotata* (Buq., Dej.), Cap. *l. c.* p. 463, Brazil; *P. oblita*, Cap. *l. c.* p. 464, Brazil; and *P. sparsuta*, Cap. *l. c.* p. 466, Brazil.

Tylopterus, g. n., Capiomont, *l. c.* p. 468. (See table, p. 276.) Sp. *Curc. melanocephalus* (De G.) and *Phyton. germari* (Schönh.). N. sp. *T. camelus*, Cap. *l. c.* p. 470, pl. 12. fig. 15, Cayenne; and *T. ochraceus*, Cap. *l. c.* p. 471, Brazil.

Bubalocephalus, g. n., Capiomont, *l. c.* p. 485. (See table, p. 276.) Sp. *B. rotundicollis* (Schönh.), Cap. *l. c.* p. 486, Andalusia; and *B. kiesenwetteri*, Capiomont, *l. c.* p. 488, Sierra Nevada.

Acroteriasis, g. n., Roelofs, Ann. Soc. Ent. Belg. x. p. 244. Allied to *Goniperus*, but with the 4th joint of the tarsi wanting, the 3rd forming a round palette. N. sp. *A. haagii*, Roel. *l. c.* p. 245, pl. 1. fig. 1, Queensland; *A. subnitidus*, Roel. ibid. pl. 1. fig. 2, Australia; *A. nubilus*, Roel. *l. c.* p. 246, pl. 1. fig. 3, North and West Australia; and *A. emarginatus*, Roel. *l. c.* p. 247, pl. 1. fig. 4, West Australia. [Lacordaire (*l. c.* pp. 249–250) remarks upon this genus and its position, and indicates the occurrence of tarsi of similar character among his *Diabathrariides* and *Erirhinides*.]

New species:—

Hypera. Capiomont (*l. c.*) describes the following new species of this genus:—(Subg. PACHYPERA, type *Phyt. spissus*, Schönh.) *H. kraatzi*, p. 495, Hungary; *H. arvernica*, p. 499, Auvergne; *H. pyrenæa*, p. 502, Bagnères de Bigorre: (subg. HYPERA, type *H. oxalis*, Hbst.) *H. orientalis*, p. 509, Greece &c.; *H. mniszechi*, p. 516, Altai; *H. marmorata*, p. 520, Hungary; *H. aubei*, p. 521, Pyrenees; *H. vicina* (Dej.), p. 522, Barbary, Algeria; *H. insularis*, p. 527, Cyprus; *H. pantherina*, p. 534, Persia?; *H. segnis*, p. 537, Tyrol; *H. tristis*, p. 542, Pyrenees; *H. bonvouloiri*, p. 549, South of France; *H. brucki*, p. 551, Tuscany; *H. lucasi*, p. 554, Morocco; and *H. obscura*, p. 556, Lozère.

Macrotarsus notatus (Schönh.), Capiomont, *l. c.* p. 483, Altai Mountains, ibid., & Russia.

Cl.

Cleonides.

Cleonus pustulosus, *C. cristulatus*, and *C. margaritiferus*. Ernest Cotty notices the mode of occurrence of these species in Algeria. Mém. Soc. Linn. du Nord de Fr. 1866, pp. 174–175.

Lixus salsolæ, sp. n., Becker, Bull. Soc. Nat. Mosc. xl. 1. p. 113, Sarepta.

Lixus creteopictus, sp. n., Wollaston, Col. Hesp. p. 129, Cape Verde Islands (S. Iago).

Erirhinides.

Geranorhinus. Schaufuss (Col. Hefte, ii. pp. 17-20) discusses the confusion which has arisen with regard to a Spanish species of this genus usually denominated *G. rufinasus* (Chevr.), and which Lacordaire declared to be identical with *Tychius suturalis* (Motsch.). The insect was described by Chevrolat under the name of *G. rufirostris*. Motschulsky has described a *Cœliosomus rufinasus* from the East Indies, and in connexion with his *Tychius fasciatus* from Birmah mentions an allied species found in Egypt on the flowers of the Tamarisk, and which he had distributed under the MS. name of *Sibines suturella*. This statement no doubt gave rise to Chevrolat's remark that a second species of *Geranorhinus* from Egypt had been described by Motschulsky under the name of *Tychius suturalis*. Lacordaire's assertion that the two species are identical seems to be quite erroneous. Schaufuss indicates that the characters of the funiculus of the antennæ in the Spanish species do not agree with those given by Lacordaire, but rather resemble those of *Hydronomus*. The funicular characters of the Egyptian species are unknown, unless Lacordaire described from an example of it, which seems not improbable. In this case the species *G. suturalis* (Lac.) would be characterized by a long second joint of the funiculus, and *G. rufirostris* (Chevr.) by having only the first joint of the funiculus elongated. A third species, allied to the latter, is described by Schaufuss.

Geranorhinus rufirostris (Chevr.). Seidlitz also indicates the characters of this species, and remarks especially upon those in which it differs from Lacordaire's generic description. (Berl. ent. Zeitschr. 1867, p. 188.) *G. rufirostris* (Seidl. nec Chevr.) = *G. elegans*, Seidlitz, *l. c.* p. 434.

Halophagus halimocnemis (Beck.) belongs to *Philernus*, according to Seidlitz (*l. c.* p. 434).

Erirhinus ephippiatus (Say), bred by Walsh from the cabbage-gall of a willow. Proc. Ent. Soc. Phil. vi. p. 268.

Geranorhinus brannanii, sp. n., Schaufuss, Col. Hefte, ii. p. 20, Balearic Islands (Palma).

Dorytomus silbermanni, Wencker, Cat. Col. Alsace, p. 129, France and Frankfort. (Descr. quoted by Heyden, Berl. ent. Zeitschr. 1867, p. 379.)

Mecinus heydeni, Wencker, Cat. Col. Alsace, p. 130, Haguenau and Frankfort. (Descr. quoted by Heyden, Berl. ent. Zeitschr. 1867, p. 379.)

Apionides.

Apion. Of the following species described by him, Desbrochers des Loges gives diagnoses in Mitth. schw. ent. Ges. ii. pp. 217, 218. *A. robusticorne* and *A. obtusum*, originally described in Bull. Acad. Hippone, 1866, pp. 45-47; and *A. tibiale* and *A. conspicuum* described in the Rendu-compte[illegible]ying Assises Sci. du Bourbonnais, 1867.

Apion lanuginosum, sp. n., Walsh, Proc. Ent. Soc. Phil. vi. p. 269, inqu[illegible] in willow-galls.

Apion 4-spinosum, sp. n., Wollaston, Col. Hesp. p. 127, Cape Verde Islands (Fogo).

Apion sareptanum, sp. n., Desbrochers des Loges, Mitth. schw. ent. Ges. ii. p. 216, Sarepta.

Attelabides.

Chalcocybebus, g. n., Vollenhoven, Tijdschr. v. Ent. 2de ser. i. p. 224.

Allied to *Cybebus*; antennæ long, scape cylindrical, funiculus 7-jointed, the joints cup-shaped, club elongated, of 3 joints, last joint longer than two preceding together. Sp. *C. nitens*, sp. n., Voll. *l. c.* p. 225, pl. 12. fig. 2, Waigiou; *C. albiguttatus*, sp. n., Voll. *l. c.* p. 226, Salwatty.

Auletes euphorbiæ, sp. n., Wollaston, Col. Hesp. p. 126, Cape Verde Islands.

Anthonomides.

Brisout de Barneville describes *Orchestes quedenfeldtii* (Gerh.). Ann. Soc. Ent. Fr. 4e sér. vii. p. 63.

Orchestes quinquemaculatus, sp. n., Chevrolat, L'Abeille, iii. p. lxvi, Mayenne.

Anthonomus sycophanta, sp. n., Walsh, Proc. Ent. Soc. Phil. vi. p. 265, and *A. tessellatus*, sp. n., Walsh, *l. c.* p. 267, inquiline in willow-galls.

Cionides.

Nanophyes. Wollaston (Col. Hesp. p. 125, note) remarks on the antennal characters of this genus.

Nanophyes olicerii (Desbr.) is described by Fairmaire. Ann. Soc. Ent. Fr. 4e sér. vii. p. 411.

Nanophyes longipes, sp. n., Wollaston, Col. Hesp. p. 125, Cape Verde Islands (S. Iago).

Nanophyes. Tournier (Ann. Soc. Ent. Fr. 4e sér. vii.) describes the following new species of this genus:—*N. difficilis*, p. 567, Sicily; *N. helveticus*, ibid., pl. 13. fig. 8, Geneva; *N. bilineatus*, p. 568, *N. setulosus*, p. 569, *N. maculatus*, ibid., and *N. minutissimus*, p. 570, Algeria.

Gymnetrides.

Brisout de Barneville (Ann. Soc. Ent. Fr. 4e sér. vii. p. 64) mentions having found *Gymnetron rostellum* near Paris, under tufts of *Potentilla anserina*, and states that *G. variabilis* (Rosenh.) = *G. sanguinipes* (Chevr.); so that the species described by him under the former name is distinct. He proposes for it the name of *algiricus*.

Gymnetron pirazzolii, sp. n., Stierlin, Mitth. schw. ent. Ges. ii. p. 225, Domodossola.

Cryptorhynchides.

Brisout de Barneville publishes (Ann. Soc. Ent. Fr. 4e sér. vii. pp. 57–63) a corrected table of the European species of *Acalles* (see 'Record,' 1866, p. 280). He also notices a variety of *A. pyrenæus* (*l. c.* p. 64).

Acalles droueti, sp. n., Crotch, P. Z. S. 1867, p. 387, pl. 23. fig. 4, Azores.

Acalles croaticus, sp. n., Brisout, *l. c.* p. 62, Croatia; *A. reinosa*, Brisout, ibid., Spain.

Cryptorhynchus lapathi. Goureau notices the mode of life of this species, which is destructive to young poplars. Bull. Soc. Ent. Fr. 1867, p. lxxxv.

Camptorhinus simplex, sp. n., Seidlitz, Berl. ent. Zeitschr. 1867, p. 189, Andalusia.

Zygopides.

Arachnopus persona, Vollenhoven, Tijdschr. v. Ent. 5de ser. i. p. 226, pl. 12. fig. 3, Waigiou; *A. geometricus*, Voll. *l. c.* p. 227, pl. 12. fig. 4, Tondano; *A. frenatus*, Voll. *l. c.* p. 228, pl. 12. fig. 5, Salwatty.

Ceuthorhynchides.

Calliodes punctiger. Kawall (Stett. ent. Zeit. 1867, pp. 117–118) describes the metamorphoses of this species, the larva of which lives in the receptacle of the dandelion (*Taraxacum officinale*).

Marmoropus besseri (Schönh.). Letzner describes the habits and transformations of this species. Jahresb. schles. Ges. vaterl. Cult. xliv. pp. 170–172.

Ceuthorhynchus. Rye (Ent. M. Mag. iv. pp. 66, 67) notices the species inhabiting *Sisymbrium officinale.* See also a note by Hislop (*l. c.* p. 112).

Ceutorhynchus versicolor, sp. n., Brisout, Cat. Col. Alsace, p. 131, Alsace, Frankfort; *C. euphorbiæ*, sp. n., Bris. *l. c.* p. 132, Alsace, Frankfort. These species are also recorded as British by Rye, Ent. Ann. 1868, pp. 71, 72.

Ceuthorhynchus barnevillei, sp. n., Grenier, Bull. Soc. Ent. Fr. 1866, p. lxv, Pyrenees.

Baridiides.

Baridius sulcipennis, sp. n. (Bris.), Heyden, Berl. ent. Zeitsch. 1867, p. 380, Frankfort; *B. fallax* sp. n. (Bris.), Heyden, ibid., Frankfort.

Calandrides.

Protocerius latus, sp. n., Vollenhoven, Tijdschr. v. Ent. 2de ser. i. p. 228, pl. 12. fig. 1. Celebes.

Sitophilus granarius. On mischief done by this species, see Künstler, Verh. zool.-bot. Ges. in Wien, xvii. pp. 928–930.

Cossonides.

Georhynchus, g. n., Roelofs, Ann. Soc. Ent. Belg. x. p. 251. Affinities uncertain; rostrum slightly constricted in the middle; scrobes entire, arched; antennæ short, robust, median, scape very short, funiculus of six joints, 1 longest and stoutest, club scarcely articulated; eyes very low, transversely oval; scutellum scarcely visible; legs compressed; tarsi narrow, joint 4 longer than 1, not bifid at apex, with two weak parallel claws in anterior, and a a single stronger claw in the intermediate tarsi; segments 1 and 2 of abdomen soldered together. Sp. *G. mortelii*, sp. n., Roel. *l. c.* p. 252, Montevideo.

New species:—

Rhyncholus euphorbiarum, Wollaston, Col. Hesp. p. 119, Cape Verde Islands (S. Antão).

Phlœophagus obesulus, Wollaston, *l. c.* p. 120, Cape Verde Islands (S. Vicente).

Phlœophagus variabilis, Crotch, Proc. Zool. Soc. 1867, p. 387, Azores.

Pentatemnus affinis, Wollaston, *l. c.* p. 122, Cape Verde Islands (S. Vicente).

Mesites hesperus, Wollaston, *l. c.* p. 123, Cape Verde Islands.

Scolytidæ.

Tomicides. Ferrari (Forst- und baumzuchtschädlichen Borkenkäfer) has published a valuable summary of the genera and European* species of this group, which he limits in accordance

* Some new exotic species are described, and known species are referred by the author to their genera in his system.

with the views of Lacordaire, and in which he recognizes 22 genera, 6 of which are new. These genera (tabulated pp. 4 & 5) are as follows:—

Crypturgus (Erichs.), 3 sp., 1 new; *Hypothenemus* (Westw.), 1 sp.; *Aphanarthrum* (Woll.); *Triotemnus* (Woll.); *Liparthrum* (Woll.); *Trypodendron* (Steph.), 2 sp.; *Xyloteres* (Erichs.), 1 sp.; *Cryphalus* (Erichs.), with *Ernophorus* (Thoms.) as a subgenus, 10 sp., 4 new; *Hypoborus* (Erichs.), 4 sp., 1 new; *Xyleborus* (Eichh.), 8 sp.; *Dryocœtes* (Eichh.), 10 sp.; *Pityophthorus* (Eichh.), 6 sp.; *Thamnurgus* (Eichh.), 3 sp.; *Tomicus* (Latr.), 8 sp., under 3 subgenera, *Cumatotomicus*, *Cyrtotomicus*, and *Onthotomicus* (Ferr.) founded on differences in the antennal club; *Amphicranus* (Erichs.); *Corthylus* (Erichs.), 10 new exotic species, under the subgenera *Corthylus*, *Microcorthylus*, and *Pseudocorthylus*; and 6 new genera. The genus *Phlœotrogus* (Motsch.) is placed, with a number of species (chiefly exotic) described by various authors, as *incertæ sedis*. A supplement contains descriptions of two or three new species, and notes on some of those referred to in the body of the memoir, concluding with a systematic catalogue of the recognized European species.

Ferrari (Col. Hefte, ii. pp. 104–115) has the following remarks upon genera and species belonging to this group:—*Monarthrum* (Kirsch) is not sufficiently characterized to allow of its identification with any of the genera accepted by Ferrari; it probably = *Corthylus* (Erichs.); *Crypturgus numidicus* (Ferr.) has been regarded by Eichhoff as = *cinereus*, but Ferrari believes it is distinct; *Cryphalus abietis* (Ratz.) and *tiliæ* (Gyll.) are considered by the author to be identical; the male of *Dryocœtes autographus* (Ratz.) is unknown, which necessitates an alteration in the table of genera, at p. 27; the descriptions of *Bostrichus duplicatus*, *xylographus*, and *tachygraphus* (Sahlb.) are reprinted by the author (*l. c.* pp. 108–120); *B. duplicatus* = *Cyrtotomicus rectangulus* (Eichh.); *B. xylographus* probably = *B.* (*Pityographus*) *exsculptus* (Ratz.); and *B. tachygraphus* seems to be most nearly allied to *Xyleborus pfeili* (Ratz.). The paper concludes with a list of errata, and with a corrected list of the species of Tomicides recognized by the author.

Ferrari remarks (Berl. ent. Zeitschr. 1867, p. 405) that he has omitted the genus *Monarthrum* (Kirsch) in his work on the Tomicides, but that from the characters given it is impossible to say whether this genus coincides with one of those proposed by him, especially with *Cosmocorynus* ♀. The name *Monarthrum* should, he thinks, be changed, as it refers to a character common to several genera.

Xyloterus. A. Puton (Ann. Soc. Ent. Fr. 4e sér. vii. pp. 631–634), in noticing the occurrence of *Xyloterus quercus* (Eichh.) in France, tabulates and describes the 3 known species of the genus.

Eichhoff characterizes *Cryphalus cinereus* (Herbst) and *C. pusillus* (Gyll.), and remarks that he is not convinced that *C. numidicus* (Ferr.) is distinct from the former. Berl. ent. Zeitschr. 1867, p. 404.

Tomicus dispar (Fab.) is figured as British by Rye, Ent. Ann. 1868, Front. figs 7 & 8 (♂ ♀).

Janson notices the deficiency of ♂ ♂ of *Tomicus villosus* although ♀ ♀ are abundant. Proc. Ent. Soc. 1867, p. xci.

According to Rye (Ent. M. Mag. iii. p. 250) *Xyloterus quercus* (Eichh.) is identical with *Bostrichus waringii* (Curt.)

Giraud notices the habits of *Bostrichus kaltenbachii* (Bach), which lives in the interior of the stem of *Teucrium scorodonia*. His observations are confirmed by Fallou and Laboulbène. Bull. Soc. Ent. Fr. 1867, pp. lviii & lix.

J. Chappell notices the larva of *Scolytus intricatus* as feeding in the small dead branches of the oak. Ent. M. Mag. iii. p. 216.

Tomicus monographus. A note on this beetle and its destructiveness is communicated by F. Moore to the Entomological Society. Proc. Ent. Soc. 1867, pp. lxxv–lxxvi.

New genera :—

Anisandrus, g. n., Ferrari, Borkenkäfer, p. 24. Allied to *Xyleborus*; joint 1 of labial palpi only ciliated at the apex; antennal club with a very faintly indicated suture. Sp. *Apate dispar* (Fab.) and *Bost. dactyliperda* (Fab.).

Xylocleptes, g. n., Ferrari, *l. c.* p. 37. Allied to *Tomicus* (=*Bostrichus* Erichs., Eichh.); joint 2 of labial palpi smaller than 1; antennal club subconcentrically imbricato-annulate; maxillary lobe with a few setiform hairs. Sp. *Tom. bispinus* (Duft.); *X. granulatus*, sp. n. (Moritz, MS.), Ferr. *l. c.* p. 40, Venezuela; *X. carbonarius*, sp. n. (Chevr. MS.), Ferr. *l. c.* p. 41, Cuba.

Corthylomimus, g. n., Ferrari, *l. c.* p. 48 = *Corthylus* (Lac. *nec* Erichs.). Funiculus 1-jointed, long; club globular, hollowed on the inner surface, very large, with sinuous sutures. Sp. *Bost. fasciatus* (Say), *Corthylus scutellaris* (Lec.). The type of *Corthylus* (Erichs.) is *Bost. compressicornis* (Fab.).

Cosmocorynus, g. n., Ferrari, *l. c.* p. 62. Funiculus 1-jointed, very short, club large, 3-jointed, joint 2 with a long setiform curved process springing from its apical margin. Sp. *C. cristatus*, sp. n., Ferr. *l. c.* p. 64, Venezuela.

Brachyspartus, g. n., Ferrari, *l. c.* p. 65. Funiculus 1-jointed, club large, compressed, acuminate, 2-jointed, suture straight. Sp. *B. moritzi*, sp. n., Ferr. *l. c.* p. 68, Venezuela.

Morizus, g. n., Ferrari, *l. c.* p. 69. Funiculus 1-jointed, very short, club subovoid, subquadriarticulate. Sp. *M. excisus*, sp. n., Ferr. *l. c.* p. 71, Venezuela. Probably also *Tom. liminaris* (Harris) and *Bostr. unidentatus* (Fab.).

Scolytodes, g. n., Ferrari, *l. c.* p. 77. Eyes coarsely facetted; head free, perpendicular, distinctly rostrated; funiculus multiarticulate, club small, roundish, compressed; pronotum and prosternum separated by a suture; abdomen slightly curved upwards; anterior tibiæ at apex externally with two strong teeth. Sp. *S. lævigatus* (Klug, MS.), Ferr. *l. c.* p. 77, Columbia.

Gymnochilus, g. n., Eichhoff, Berl. ent. Zeitschr. 1867, p. 399. Head rather prominent; labrum transverse; funiculus 7-jointed; club compact; joints 1–3 of tarsi simple. Sp. *G. zonatus*, sp. n., Eichhoff, *l. c.* p. 399, Columbia.

Hexacolus, g. n., Eichhoff, *l. c.* p. 399. Head globose; funiculus 6-jointed; club subannulate; joints 1–3 of tarsi simple. Sp. *H. glaber*, sp. n., Eichhoff, *l. c.* p. 400, Cuba.

New species :—

Xyleborus. Eichhoff (Berl. ent. Zeitschr. 1867) describes the following new American species:—*X. adelographus*, p. 400, Brazil; *X. fuscatus*, ibid., Columbia; *X. celsus*, ibid., North America; *X. impressus*, ibid., Massachusetts; *X. affinis*, p. 401, North America, Cuba; *X. inermis*, ibid., Cuba; *X. confusus*, ibid., Chili, Venezuela. (Eichhoff also describes a species from Carolina, to which he gives the name of *X. pini*, Say??)

Tomicus. The following new North-American species are described by Eichhoff (*l. c.*):—*T. præmorsus*, p. 401; *T. præfractus*, ibid.; *T. grandicollis*, p. 402; *T. aculsus*, ibid.; *T. decretus*, ibid.; *T. hirsutus*, ibid. (Sitka); and *T. cælatus*, ibid. (Pennsylvania, North Carolina).

Tomicus trypanæoides, Wollaston, Col. Hesp. p. 114, Cape Verde Islands.

Tomicus proximus, Eichhoff, *l. c.* p. 403, South Europe.

Corthylus (Erichs., Ferr.). Ferrari (*l. c.*) describes the following new species of this genus, from Venezuela:—(subg. CORTHYLUS) *C. validus*, pp. 54 & 55; *C. bicolor*, pp. 54 & 56; *C. signatus*, pp. 54 & 56; *C. lobatus*, pp. 54 & 57; *C. dimidiatus*, pp. 54 & 57: (subg. MICROCORTHYLUS) *M. parvulus*, pp. 53 & 58: (subg. PSEUDOCORTHYLUS) *P. castaneus*, pp. 55 & 59; *P. letzneri*, ibid.; *P. redtenbacheri*, pp. 55 & 60; and *P. glabratus*, ibid.

Crypturgus numidicus, Ferrari, Borkenkäfer, p. 6, Algeria and Southern Europe.—*Crypturgus cedri*, Eichhoff, *l. c.* p. 403, Corsica.

Cryphalus hampei, Ferrari, *l. c.* pp. 11 & 12, France and Siebenbürgen; *C.* (*Ernophorus*) *thomsoni*, Ferr. *l. c.* pp. 12 & 14 (= *E. fagi*, Thoms.), Europe; *C. obscurus*, Ferr. *l. c.* p. 17, Cuba; *C. intermedius*, Ferr. *l. c.* p. 79, Germany.

Cryphalus mucronifer, Wollaston, *l. c.* p. 116, Cape Verde Islands.

Hypoborus? *hispidus*, Ferrari, *l. c.* p. 19, Cuba; *H.*? *setosus* (Eichh. MS.), Ferr. *l. c.* p. 81, Schleswig?—*Hypoborus*? *setosus*, Eichhoff, *l. c.* p. 391, Schleswig-Holstein.

Dryocœtes? *eichhoffi*, Ferrari, *l. c.* p. 29, Greece.

Hylesinus putonii, Eichhoff, *l. c.* p. 403, Madrid.

Aphanarthrum hesperidum, Wollaston, *l. c.* p. 117, Cape Verde Islands.

Liparthrum loweanum, Wollaston, *l. c.* p. 118, Cape Verde Islands.

BRENTHIDÆ.

Cyriodontus, g. n., Kirsch, Berl. ent. Zeitschr. 1867, p. 216. Allied to *Orychodes*; head as long as broad; rostrum elongate, basal part much narrower than head; antennæ inserted before middle of rostrum. Sp. *Arrhenodes lineatus* (Schönh.).

Automolus, g. n., Kirsch, *l. c.* p. 218. Allied to *Orychodes*; head longer than broad; eyes small; rostrum elongate, basal part cylindrico-conical ♂, very short ♀, anterior part longer, quadrangular ♂, cylindrical and filiform ♀; antennæ inserted before the middle (♂) or at the base (♀) of the rostrum, joints 2–4 small; anterior tibiæ dilated and dentate in middle. Sp. *A. pictus* (Dej.), Kirsch, *l. c.* p. 218, Bogotá.

Arrhenodes goudoti, sp. n., Kirsch, *l. c.* p. 215, and *A. trilineatus*, sp. n., Kirsch, ibid., Bogotá.

Cleoderes bivittatus, sp. n., Kirsch, *l. c.* p. 219, Bogotá.

Brenthus armillatus, sp. n. (Chevr.), Kirsch, *l. c.* p. 219, and *B. unidentatus*, Kirsch, *l. c.* p. 221, Bogotá.

ANTHRIBIDÆ.

Brachytarsus constrictus, sp. n., Stierlin, Mitth. schw. ent. Ges. ii. p. 224, Sarepta.

BRUCHIDÆ.

Bruchus brewerı, sp. n., Crotch, Proc. Zool. Soc. 1867, p. 389, and *B. azoricus*, sp. n., Crotch, *l. c.* p. 390, Azores.

Bruchus calcaratus, sp. n., Wollaston, Col. Hesp. p. 140, and *B. amplicornis*, sp. n., Woll. *l. c.* p. 141, Cape Verde Islands.

Bruchus musculus, sp. n., Solsky, Horæ Soc. Ent. Ross. iv. p. 95, Sarepta.

Longicornia.

J. Thomson (Physis, i. pp. 1–10) notices Schiödte's proposed classification of the Longicorn Beetles (See 'Record,' 1864, pp. 417, 418). He makes the curious mistake of supposing that Schiödte proposes to name the Arachnida, Myriopoda, and Insecta respectively Digitigrada, Unguligrada, and Plantigrada, instead of merely indicating an analogy derived from their mode of progression. The characters derived from the footstalks of the labial palpi by Schiödte are said by Thomson to be erroneous with regard to the Vesperini and Asemini, which agree in this respect with the true Cerambycini. Hence he is led to propose the following classification into Tribes and Subtribes :—Tribe I. Lamitæ; Tribe II. Cerambycitæ veræ, with subtribes 1. *Lepturitæ*, 2. *Cerambycitæ veræ*, 3. *Asemitæ*; Tribe III. Prionitæ, with subtribes 1. *Spondylitæ* and 2. *Prionitæ veræ*.

According to Hensel, a large Beetle, probably of this group, cuts off twigs of the thickness of a man's finger by seizing them with its mandibles, and swinging round in circles. Stein, Berl. ent. Zeitschr. 1867, p. 212.

C. G. Thomson (Skand. Col. viii. pp. 3–102) treats of the Scandinavian species of this group of Beetles. He follows generally the arrangement sketched in his first volume, except that subtribes are admitted in some of the tribes: the tribe *Obriina* is transferred from the Lepturitæ to the Cerambycidæ, *Gracilia* being separated from it to stand under the *Callidiina*, and the arrangement of the Necydaliform genera is quite altered. These insects are divided by Thomson (*l. c.* pp. 43–48) between the Cerambycidæ and Lepturitæ,—the genera *Molorchus* (Fab.), incl. *umbellatarum* (Linn.), and *Cænoptera* (Thoms.), incl. *minor* (Linn.), forming the tribe *Molorchina* in the former family; whilst *Necydalis* (Linn.), limited to *N. major* (Linn.), constitutes by itself the tribe *Necydalina* of the family Lepturitæ.

Pascoe publishes (Journ. Linn. Soc. Zool. ix. pp. 300–308), a supplement to his list of Australian Longicornia. (See 'Record,' 1866, p. 287.)

Lamiides.

Pascoe has continued his descriptions of the Malayan Longicorns collected by Wallace (Trans. Ent. Soc. 3rd ser. iii. pp. 337–464). In this portion he reaches the *Tmesisterninæ*, the last subfamily but one in his arrangement of these insects. The following known species and genera are characterized :—

(Saperdinæ) *Serixia prolata* (Pasc.), p. 338; *S. cephalotes* (Pasc.), p. 339; *S. longicornis* (Pasc.), ibid.; *S. literata* (Pasc.), p. 340; *S. ornata* (Pasc.), p. 341; *Xyaste nigripes* (Pasc.), p. 346: (Astatheinæ) *Astathes*

nitens (Fab.), p. 350; *A. daldorfii* (Fab.), ibid.; *A. posticalis* (Thoms.), p. 351; *A. terminata* (Pasc.), ibid.; *A. fulgida* (Fab.), p. 353; *A. velata* (Thoms.), ibid.; *A. splendida* (Fab.), ibid.; *A. purpurea* (Pasc.), p. 354; *Eustathes* (Newm.), p. 354; *Tropimetopa simulator* (Pasc.), p. 357; *Chrcoloma* (*Astathes*) *nigriventris* (Thoms.), p. 360: (PHYTŒCIINÆ) *Glenea novemguttata* (Lap.), p. 366; *G. blandina* (Pasc.), p. 369; *G. pulchella* (Hope), p. 370; *G. juno* (Thoms.), p. 372; *G. voluptuosa* (Thoms.), p. 373; *G. picta* (Fab.), p. 373 [pl. 17. fig. 6]; *G. elegans* (Oliv.), p. 374; *G. nympha* (Thoms.), p. 375; *G. delia* (Thoms.), ibid.; *G. heptagona* (Thoms.), p. 376; *G. bimaculicollis* (Thoms.), p. 377; *G. amboynica* (Thoms.), ibid.; *G. cyanipennis* (Thoms.), p. 378; *G. lefebvrii* (Guér.) = *festiva* (Boisd.) = *antica* (Thoms.), p. 378; *G. galathea* (Thoms.). p. 379; *G. collaris* (Pasc.), p. 380; *G. manto* (Pasc.), ibid.; *G. funerula* (Thoms.), p. 381; *G. anticepunctata* (Thoms.), p. 382; *G. oudetera* (Thoms.), p. 383; *G. numerifera* (Thoms.), p. 385; *G. extensa* (Pasc.), ibid.; *G. acuta* (Fab.), p. 386; *G. ochraceovittata* (Thoms.), ibid.; *G. boisduvalii* (Thoms.), p. 388; *G. saperdoides* (Thoms.), p. 389; *G. vittifera* (Boisd.), p. 390; *G. illuminata* (Thoms.), p. 392; *G. alysson* (Pasc.), p. 393; *G. jubæa* (Pasc.), p. 394; *G. albolineata* (Thoms.), p. 395; *G. lugubris* (Thoms.), ibid.; *G. interrupta* (Thoms.), p. 397; *G. mathematica* (Thoms.), p. 398; *G. algebraica* (Thoms.), ibid.; *G. scalaris* (Thoms.) = *cunila* (Pasc.), p. 400; *G. exculta* (Newm.) = *viridipustulata* (Thoms.), p. 401; *G. venusta* (Guér.) = *viridicincta* (Boisd.), p. 402; *G. viridinotata* (Blanch.), ibid.; *G. basalis* (Thoms.), p. 403; *G. despecta* (Pasc.) = *guttigera* (Thoms.), ibid.; *G. detrita* (Pasc.) = *maculipennis* (Thoms.), p. 404; *G. grisea*, *arouensis*, and *fulvomaculata* (Thoms.), p. 407; *G. vesta* (Pasc.), p. 411; *G. citrina* (Thoms.) = *anthyllis* (Pasc.), p. 411; *G. miles* (Newm.) = *sanguinaria* (Thoms.), p. 412; *Nupserha fricator* (Dalm.), p. 414; *Oberea curialis* (Pasc.), p. 421; *O. rubetra* (Pasc.), p. 422; *O. clara* (Pasc.), p. 426; *O. umbrosa* (Pasc.), p. 431; *O. annulicornis* (Pasc.), ibid.; *O. ophidiana* (Pasc.), p. 433; *O. tenuata* (Pasc.), p. 435: (TMESISTERNINÆ) *Trigonoptera maculata* (Perr.), p. 442; *T. bimaculata* (Thoms.), ibid.; *Trachelophora curvicollis* (Perr.), p. 452; *Anapansa armata* (Thoms.), ibid.; *Mulciber linnæi* (Thoms.), p. 453; *Tmesisternus politus* (Blanch.), p. 461; *T. tersus* (Pasc.) = *Ichth. 4-fasciatus* (Thoms.), ibid.; and *T. trivittatus* (Guér.) = *bicinctus* (Boisd.), p. 464.

Dorcadionites. J. THOMSON (Physis, i. pp. 10–84) publishes a revision of the known species of his subtribe *Dorcadionites*, from which, as laid down in his 'Systema Cerambycidarum,' he now excludes the genus *Cyrtinus* (Lec.), as nearly allied to *Psenocerus* (Lec.), whilst he adds to the group the genus *Brimus* (Lec.). Several new species are described, and full descriptions given of the species of which diagnoses were published in his 'Syst. Cerambb.'

The following synonymic indications may be given from this paper:—*Dorcadion navaricum*, *monticola*, *meridionale*, *pyrenæum*, and *mendax* = *fuliginator* (Linn.); *D. donzeli* (Muls.) = *molitor* (Oliv.); *D. interruptum* (Muls.) = *divisum* (Germ.); and *D. thracicum* (Küst.) = *ferrugineipes* (Ménétr.); *Parmena hirsuta*, *solieri*, *pilosa*, and *dahlii* = *pubescens* (Dalm.); *Auxa amplicollis* (Pasc.) = *armata* (Coq.); *Dioxippe* (Thoms.) = *Aconodes* (Pasc.); *Parmena hemisphærica* (Blanch.) = *Microcleptes aranea* (Newm.); *Cerambyx*

fasciatus (De V.), and *balteata* (Fab.)=*Parmena balteus* (Linn.); *Phryssoma hipporhinus* (White) = *gigantea* (Guér.); *Phantasis denticulata* (Thoms.)= *crispa* (Linn.); *Lepromoris* (Pasc.) = *Leprosoma* (Thoms.); *L. asperatum* (Thoms.)=*gibbum* (Brullé); *Dorcadion inclusum* (Ferr.) = *labyrinthicum* (Thoms.), both in 1864; *D. scopolii, ovatum, germanicum, ungaricum, vittigerum, etruscum,* and *smyrnense*=*lineatum* (Fab.); *D. cretaceum* (Ferr.)= *niveisparsum* (Thoms.), both in 1864; *Collapteryx* (Newm.) = *Monoilema* (Say); *Monoilema albo-tessellatum* (Thoms.)=*albo-pictum* (White).

Dorcadion segovianum (Chevr.)=*dejeanii* (Chevr.), and *D. nigrolineatum, alternatum,* and *albicans* (Chevr.)=*hispanicum* (Muls.), according to Seidlitz, Berl. ent. Zeits. 1867, p. 434.

Calamobius and *Hippopsis.* On the distinctness of these genera see Pascoe, Proc. Ent. Soc. 1865, p. 126.

Sysspilotus macleayi (Pasc.)=*Menyllus maculicornis* (Pasc.), according to Pascoe, Journ. Linn. Soc. Zool. ix. p. 300, note.

Agapanthia kirbyi (Schönh.). Abeille de Perrin (Ann. Soc. Ent. Fr. 4e sér. vii. pp. 68, 69) remarks upon the synonymy of this species, with which he identifies *A. verbasci* (Meg.), *latipennis* (Muls.), and *zawadskyi* (Fairm.).

Saperda inornata (Say) is referred to by Walsh as the cause of a pseudogall on *Salix longifolia* and *Populus angulata.* Proc. Ent. Soc. Phil. vi. p. 264.

Saperda scalaris. Larva noticed by Kawall, Stett. ent. Zeit. 1867, p. 123.

Monohammus sutor (Linn.). Larva described and figured by Gernet (Horæ Soc. Ent. Ross. v. p. 19, pl. 2. fig. 6).

Dorcadion rufipes (Fab.). Perty (Mitth. naturf. Ges. in Bern, 1867, p. 308) describes an example of this species with the left hind tarsus cleft.

New genera :—

Of his subfamily *Astatheinæ,* Pascoe enumerates 29 Malasian species, which he refers to 7 genera, 4 of which are new, as shown in the following table (Trans. Ent. Soc. iii. p. 348) :—

I. Metasternum produced anteriorly.
  A. Metasternal process received in a notch.
    1. Elytra rounded at apex ..... 1. *Eustathes* (Newm.).
    2. Elytra spined at apex ..... 2. *Tropimetopa* (Thoms.).
  B. Metasternal process lying on mesosternum 3. *Astathes* (Newm.).
II. Metasternum not produced anteriorly.
  A. Scape not longer than joint 3.
    1. Elytra rounded at apex ..... 4. *Chreonoma,* g. n.
    2. Elytra spined at apex ..... 5. *Ochrocesis,* g. n.
  B. Scape longer than joint 3.
    1. Prothorax tumid at sides ..... 6. *Cyanastus,* g. n.
    2. Prothorax nearly cylindrical ..... 7. *Momisis,* g. n.

Of the *Phytœciinæ* the Malayan species recorded by Pascoe are very numerous (163), principally belonging to the great genera *Glenea* and *Oberea.* Of the 10 genera admitted among them by Pascoe, 7 are new, as indicated in the following table (*l. c.* p. 363) :—

I. Abdominal segments of unequal length.
A. Elytra abruptly deflexed at sides.
1. Scape robust.
a. Posterior tibiæ rounded ..... 1. *Glenea* (Newm.).
b. Posterior tibiæ compressed..... 2. *Chlorisanis*, g. n.
2. Scape slender ..... 3. *Cryllis*, g. n.
B. Elytra rounded at sides.
1. Tarsi nearly equal in length.
a. Apices of elytra bimucronate..... 4. *Daphisia*, g. n.
b. Apices of elytra rounded..... 5. *Tephrocoma*, g. n.
2. Posterior tarsi very long..... 6. *Ossonis*, g. n.
II. Abdominal segments nearly equal.
A. Elytra carinately deflexed at sides.
1. Antennary tubers remote and divergent.
a. Prothorax abruptly constricted at sides 7. *Dystus*, g. n.
b. Prothorax subcylindric ..... 8. *Nupserha* (Thoms.).
2. Antennary tubers approximate ..... 9. *Scytasis*, g. n.
B. Elytra scarcely deflexed at sides .....10. *Oberea* (Muls.).

Of his *Tmesisterninæ*, Pascoe admits 16 Malayan genera, 6 of which are new. Their characters are shown in the following table (*l. c.* p. 440) :—

I. Head vertical.
A. Mesosternum of normal breadth.
1. Prosternal process received in a notch .. 1. *Hestima*, g. n.
2. Prosternal process free.
a. Eyes roughly granulate.
* Prothorax toothed at sides ..... 2. *Amblymora*, g. n.
† Prothorax not toothed at sides.
α. Pro- and mesosterna vertical on their opposing faces.
3. *Orinœme*, g. n.
β. Pro- and mesosterna rounded on their opposing faces.
a. Scape shortly ovate ..... 4. *Rhadia*, g. n.
b. Scape subcylindrical ..... 5. *Atelais*, g. n.
b. Eyes finely granulate.
* Pro- and mesosterna rounded on their opposing faces.
6. *Anapansa* (Thoms.).
† Prosternum depressed, mesosternum elevated.
7. *Trachelophora* (Perr.).
‡ Pro- and mesosterna elevated..... 8. *Mulciber* (Thoms.).
B. Mesosternum very broad ..... 9. *Arsysia*, g. n.
II. Head porrect.
A. Prothorax laterally margined.
1. Apex of prothorax emarginate (♂) ....10. *Elais* (Thoms.).
2. Apex of prothorax truncate in ♂ and ♀.
a. Prothorax with a large submarginal spine.
* Femora sublinear.
α. Head with an infraocular process (♂).
11. *Pascoëa* (White).
β. Head normal.....12. *Sphingnotus* (Pasc.).
† Femora clavate .....13. *Polyxo* (Thoms.).

b. Prothorax with no submarginal spine.

* Joint 3 of antennæ scarcely longer than scape.

14. *Mneside* (Thoms.).

† Joint 3 of antennæ much longer than scape.

15. *Arrhenotus* (Pasc.).

B. Prothorax without a lateral margin..... 16. *Tmesisternus* (Latr.).

Nicotelea, g. n., Pascoe, Trans. Ent. Soc. 3rd ser. iii. p. 364, note. Allied to *Glenea*; head quadrate in front; antennæ robust, short, joints cylindrical; prothorax tumid at sides, disk irregular; elytra flattened above, not keeled, truncate at apex; legs robust; pro- and mesosterna simple. Type *Lamia nigricornis* (Fab.).

Blepisanis, g. n., Pascoe, *l. c.* p. 365, note. Allied to *Glenea*; antennæ gradually thickened towards apex; abdominal segments nearly equal, interfemoral process small. Type *Saperda bohemani*.

Thermistis, g. n., Pascoe, *l. c.* p. 438, note. Allied to *Glenea*; sides of prothorax angulato-spinose; antennæ distinctly jointed. Type *Lamia croceocincta* (W. W. Saund.).

Mythergates, g. n., Thomson, Physis, i. p. 19. Allied to *Belodera* (Thoms.); antennæ 11-jointed, pilose beneath, joint 1 short, stout, 3 scarcely longer than 2; prothorax elongate, 4-spinose; elytra elongate, widened at the shoulders, bispinose at base, divaricate at apex; pro- and mesosternal appendages laminiform; anterior acetabula slightly angulated externally. Sp. *Centrura divaricata* (Coq.).

Omoscylon, g. n., Thomson, *l. c.* p. 74. Allied to *Dorcadion*, apterous; antennæ extending a little beyond middle of body, 11-jointed, 3 longer than the rest; prothorax elongate, cylindrical, unarmed; elytra subcylindrical, elongate, coalescent, not shouldered or carinated on the sides; sternal appendages laminiform; legs very stout. Sp. *Moneilema subrugosum* (Bland), *M. crassum* (Lec.), and *M. inæquale* (Say).

New species:—

Amblymora (g. n., see p. 287) *instabilis*, Pascoe, *l. c.* p. 455 [pl. 18. fig. 3], Aru, Batchian; *A. fumosa*, Pasc. ibid., Morty, Gilolo; *A. consputa*, Pasc. *l. c.* p. 456, Dorey, Salwatty; *A. marmorea*, Pasc. ibid., Kaioa; and *A. conferta*, Pasc. ibid., Tondano.

Arsysia (g. n. = *Trigonoptera*, Perr., changed on account of *Trygonoptera*, Müll. & Henle, see p. 287). *A. nervosa*, Pascoe, *l. c.* p. 443, Timor; *A. flavicincta*, Pasc. ibid. [pl. 18. fig. 1], Batchian; *A. sordida*, Pasc. *l. c.* p. 444, Mysol; *A. tessellata*, Pasc. *l. c.* p. 445, Ceram.

Astathes. Of this genus Pascoe (*l. c.*) describes the following new Malasian species:—*A. unicolor*, p. 349, *A. flaviventris*, p. 352, Sarawak; *A. coccinea*, p. 35, note, Labuan; *A. contentiosa*, p. 352, Singapore; and *A. pulchella*, p. 354, Sumatra and Malacca.

Atelais (g. n., see p. 287) *illæsa*, Pascoe, *l. c.* p. 457 [pl. 18. fig. 2], *A. despoliata* and *A. evicta*, Pasc. *l. c.* p. 458, Batchian; *A. patruelis*, Pasc. ibid., Morty; *A. porcina*, Pasc. *l. c.* p. 459, Morty; and *A. seriata*, Pasc. ibid., Mysol.

* *Athemistus bituberculatus* (Howitt), Pascoe, Journ. Linn. Soc. ix. p. 306, and *A. æthiops* (Howitt), Pasc. *l. c.* p. 307, Victoria; *A. howittii*, Pasc. *l. c.*

p. 306, New South Wales and Queensland; *A. punctipollis*, Pasc. *l. c.* p. 307, Gippsland.

Atyporis intercalaris, Pascoe, Journ. Linn. Soc. ix. p. 301, Cape York.

Bacchisa (g. n.*) *coronata*, Pascoe, Trans. Ent. Soc. 3rd ser. iii. p. 342, pl. 15. fig. 11, Flores.

Chlorisanis (g. n., see p. 287) *viridis*, Pascoe, *l. c.* p. 413 [pl. 16. fig. 7], Sarawak.

Chreonoma (g. n., see p. 286). Of this genus Pascoe (*l. c.*) describes the following new Malasian species:—*C. venusta*, p. 358 [pl. 16. fig. 1], *C. seclusa*, p. 359, Batchian; *C. flavicincta*, p. 359, Saylee; *C. bimaculata*, ibid., Waigiou; *C. melanura*, p. 360, *C. albicornis*, p. 361, Singapore; *C. vernula*, p. 360, Morty; *C. annulicornis*, p. 361, Tondano; and *C. tabida*, ibid., Sarawak.

Cryllis (g. n., see p. 287) *clytoides*, Pascoe, *l. c.* p. 417, pl. 15. fig. 9, Singapore.

Cyanastus (g. n., see p. 286) *aulicus*, Pascoe, *l. c.* p. 356 [pl. 16. fig. 2], Macassar; *C. simius*, Pasc. *l. c.* p. 356, Menado.

Daphisia (g. n., see p. 287) *pulchella*, Pascoe, *l. c.* p. 419, pl. 15. fig. 6, Singapore.

Dorcadion. Thomson (Physis, i.) describes the following as new species of this genus:—*D. rugosum* (Kind. MS.), p. 46, Siberia; *D. pluto*, p. 47, Siberia; *D. senegalense* (Buq. MS.), p. 54, Senegal; *D. gallipolitanum*, p. 59, Gallipoli; *D. micans*, p. 61, Armenia; *D. byzantinum*, p. 69, Greece; *D. grammophilum*, p. 70, Armenia.

Dystus (g. n., see p. 287) *notator*, Pascoe, *l. c.* p. 416 [pl. 16. fig. 6], Sumatra and Singapore.

Eustathes semiusta, Pascoe, *l. c.* p. 355, Amboyna.

Glaucytes suturalis, Pascoe, Journ. Linn. Soc. ix. p. 308, Cape York.

Glenea. Pascoe (Ent. Trans. 3rd ser. iii.) describes the following new Malasian species:—*G. coris*, p. 366, *G. myrsine*, p. 367, *G. cleome*, p. 368, *G. mesoleuca*, p. 379 [pl. 17. fig. 4], *G. ianthe*, p. 383, *G. egeria*, p. 384, *G. irene*, p. 392, *G. anona*, p. 393, *G. discoidalis*, p. 399, *G. palliata*, p. 400, and *G. myrrhis*, p. 404, Singapore; *G. adelia*, p. 367, *G. areca*, p. 369, *G. laudata*, p. 370 (=*viridi-notata*, Thoms. nec Blanch.), *G. fatalis*, p. 382, *G. calypso*, ibid. [pl. 17. fig. 3], *G. aspasia*, p. 384 [pl. 17. fig. 2], *G. melia*, p. 385, *G. sejuncta*, p. 387, *G. camelina*, p. 392, *G. analytica*, p. 399, *G. eclectica*, ibid., *G. iresine*, p. 406, *G. medea*, p. 410 [pl. 17. fig. 5], Sarawak; *G. elate*, p. 368, *G. iridescens*, p. 371, and *G. sospita*, p. 409 [pl. 17 fig. 8], Malacca; *G. camilla*, p. 370, Sumatra; *G. nicanor*, p. 371, Macassar; *G. homora*, p. 373, Penang; *G. thomsoni*, p. 376 [pl. 17. fig. 1], and *G. cyrilla*, p. 377, Batchian; *G. atropa*, p. 387, *G. attalea*, p. 396, and *G. cerulcata*, ibid., Ceram; *G. sophronia*, p. 388, *G. venenata*, p. 405, *G. stella*, p. 408, and *G. miniacea*, p. 412, Dorey; *G. myrsia*, p. 389, and *G. corypha*, p. 397, Amboyna; *G. acasta*, p. 390, Java; *G. dolmissa*, p. 391, *G. iphia*, ibid., *G. cinna*, p. 400 [pl. 17. fig. 7], and *G. olyra*, p. 401, Tondano; *G. latania*, p. 394, and *G. tringaria*, p. 412, Menado; *G. lachrymosa*, p. 406 [pl. 17. fig. 9], Menado and Macassar; *G. hyphaene*, p. 397, Morty; *G. melissa*, p. 408, Dorey and Mysol; *G. mansueta*, p. 409, Mysol; *G. vanessa*, p. 408 [pl. 17. fig. 10], Waigiou; *G. glechoma*, p. 409, Matabello; *G. concinnata*, p. 403, Sarawak, Mysol, Dorey, &c.; and *G. luctuosa*, p. 381, Aru and Salwatty.

* See 'Record,' 1893, p. 385.

Glenea. Pascoe also describes the following as new species:—*G. lusoria* and *G. maura*, *l. c.* p. 405, note, Philippine Islands; and *G. lenita*, p. 410, note, India.

Hathliodes costulatus, Pascoe, Journ. Linn. Soc. ix. p. 305, Champion Bay.

Hebesecis basalis, Pascoe, Journ. Linn. Soc. ix. p. 301, Queensland.

Hestima (g. n., see p. 287) *floccosa*, Pascoe, Ent. Trans. 3rd ser. iii. p. 446 [pl. 18, fig. 7], Kaioa, Batchian, &c.; *H. sybroides*, Pasc. ibid., Dorey; *H. stellata*, Pasc. ibid., Ceram, Bouru; *H. trigeminata*, Pasc. *l. c.* p. 447, Waigiou, Aru; *H. bisignifera*, Pasc. ibid., Batchian.

Lychrosis afflictus, Pascoe, Journ. Linn. Soc. ix. p. 305, Cape York.

Microcleptes blanchardii, Thomson, *l. c.* p. 21, *M. globulosus*, Thoms. *l. c.* p. 22, and *M. sphæroides*, Thoms. ibid., Chili.

Microtragus pascoei, Thomson, *l. c.* p. 36=*M. amycteroides* (Pasc.) nec *Phryssoma amycteroides* (White), Queensland.

Momisis (g. n., see p. 286) *ægrota*, Pascoe, Ent. Trans. 3rd ser. iii. p. 362 [pl. 16. fig. 4], Flores.

Moncilema infamiæ, Thomson, *l. c.* p. 79, *M. perforatum* (Chevr. MS.), Thoms. *l. c.* p. 80, *M. mortuale*, Thoms. ibid., and *M. sinistrum*, Thoms. *l. c.* p. 81, from Mexico.

Mulciber biguttatus, Pascoe, *l. c.* p. 453, Singapore; *M. pullatus*, Pasc. *l. c.* p. 454, Batchian.

Oberea. Of this genus Pascoe (*l. c.*) describes the following new Malasian species:—*O. brevicollis*, p. 420, *O. prolixa*, p. 424, *O. insoluta*, ibid., *O. neptis*, p. 425, *O. consentanea*, p. 426, *O. compta*, p. 429, *O. anguina*, p. 433, and *O. acicularis*, p. 435, Sarawak; *O. macilenta*, p. 421, *O. lusciosa*, p. 422, *O. necydaloides*, p. 428, Singapore; *O. gracillima*, p. 422 [pl. 16. fig. 9], and *O. mutata*, p. 425, Sumatra; *O. lyncea*, p. 423, *O. insperans*, p. 431, *O. variicornis*, p. 432, and *O. delicata*, p. 436, Tondano; *O. morosa*, p. 423, *O. neutralis*, p. 425, *O. lætifica*, p. 430, and *O. insensilis*, p. 436, Menado; *O. protensa*, p. 426, Sula; *O. sclerosa*, p. 427, Bouru; *O. institoria*, p. 428, Amboyna; *O. famelica*, p. 429, *O. scroula*, p. 434, and *O. tenera*, p. 436, Macassar; *O. deflua*, p. 430, Aru; *O. pictipes*, p. 434, Java; *O. semimaura*, p. 437, Batchian; *O. nefasta*, p. 427, Mysol, Dorey; *O. macrocera*, p. 429, and *O. strigosa*, p. 438, Sumatra and Singapore; *O. limbata*, p. 433, Singapore and Sarawak; *O. mundula*, p. 432, Waigiou and Salwatty; *O. præcita*, p. 434, Sumatra, Sarawak, and Singapore; *O. commoda*, p. 437, Batchian and Kaioa; and *O. fractiosa*, ibid., Ceram and Salwatty.

Ochrocesis (g. n., see p. 286) *evanida*, Pascoe, *l. c.* p. 357 [pl. 16. fig. 3], Sarawak.

Orinome (g. n., see p. 287) *chalybeata*, Pascoe, *l. c.* p. 448 [pl. 18. fig. 5], Ternate, Saylee; *O. acutipennis*, Pasc. *l. c.* p. 449, Batchian, Gilolo; *O. rufitarsis*, Pasc. ibid., Dorey; *O. puncticollis*, Pasc. ibid., Ceram; and *O lineigera*, Pasc. *l. c.* p. 450, Mysol, Bouru, New Guinea.

Ossonis (g. n., see p. 287) *clytomima*, Pascoe, *l. c.* p. 418, pl. 15. fig. 10, Sarawak.

Penthea macularia, Pascoe, Journ. Linn. Soc. ix. p. 303, North Australia.

Phœapate denticollis, Pascoe, Journ. Linn. Soc. ix. p. 306, Queensland.

Phantasis proserpina, Thomson, *l. c.* p. 29, Damaraland.

Pogonocherus bidentatus, Thomson, Skand. Col. viii. p. 85 (=*L. hispida*, Gyll.).

Rhadia (g. n., see p. 287) *pusio*, Pascoe, Ent. Trans. 3rd ser. iii. p. 451 [pl. 18. fig. 6], Dorey.

Rhytiphora argus, Pascoe, Journ. Linn. Soc. ix. p. 302, Queensland; *R. intertincta*, Pasc. ibid., South Australia.

Scytasis (g. n., see p. 287) *nitida*, Pascoe, Ent. Trans. 3rd ser. iii. p. 415 [pl. 16. fig. 8], *S. punctigera*, Pasc. ibid., and *S. oxyura*, Pasc. *l. c.* p. 416, Sarawak.

Serixia. Of this genus Pascoe (*l. c.*) describes the following Malasian species:—*S. marginata*, p. 337, *S. fulvida*, p. 341, Batchian; *S. aurulenta*, p. 337, *S. lychnura*, p. 338, Sarawak; *S. optabilis*, p. 337, Ceram; *S. præusta*, p. 340, Mysol; *S. quadrina*, ibid., Morty.

Sodus venosus, Pascoe, Journ. Linn. Soc. ix. p. 304, Cape York.

Symphyletes anaglyptus, Pascoe, Journ. Linn. Soc. ix. p. 303, and *S. caprcolus*, Pasc. *l. c.* p. 304, Queensland.

Tephrocoma (g. n., see p. 287) *livia*, Pascoe, Ent. Trans. 3rd ser. iii. p. 410 [pl. 16. fig. 5], Ceram.

Tmesisternus equestris, Pascoe, *l. c.* p. 462, Dorey, Saylee; *T. schaumii*, Pasc. ibid., Key; *T. glaucus*, Pasc. *l. c.* p. 463, Amboyna, Ceram; and *T. restrictus*, Pasc. *l. c.* p. 464, Mysol, Waigiou.

Xyaste (Pasc.). Of this genus Pascoe (*l. c.*) describes the following new Malasian species:—*X. semiusta*, p. 343, pl. 15. fig. 4, Sumatra; *X. paradoxa*, p. 343, *X. subminiacea*, p. 344, Singapore; *X. invida*, p. 343, *X. torrida*, p. 344, *X. fumosa*, p. 347, Sarawak; *X. finita*, p. 345, Kaioa; *X. palliata*, ibid., Saylee; *X. cupida*, ibid., Batchian; and *X. trigonalis*, p. 346, Morty.

Lepturides.

Abeille de Perrin remarks that *Leptura* 4-*fasciata* (Fab.) seems to be identical with the Linnean species *Strangalia* 4-*fasciata*, and that it is probably owing to some confusion that it figures in the catalogues as a distinct species of *Anoplodera* (Ann. Soc. Ent. Fr. 4e sér. vii. p. 70).

Strangalia quadrifasciata. Kawall notices the deposition of the eggs of this species in clefts of the bark of a dry piece of Alder. Stett. ent. Zeit. 1867, p. 118.

Leptura calcarata. Perty (Mitth. naturf. Ges. in Bern, 1867, p. 305, fig. 12) describes and figures a specimen of this species having the left anterior leg greatly thickened or widened and with only 3 tarsal joints.

Rhagium grandiceps, sp. n., Thomson, Skand. Col. viii. p. 50 (= *mordax*, Gyll.).

Toxotus lacordairii, sp. n., Pascoe, Proc. Ent. Soc. 1867, p. lxxxiv, Greece.

Cerambycides.

Diotima. Pascoe (Ann. & Mag. N. H. 3rd ser. xix. p. 310, note) remarks on species of this genus.

Necydalis and *Molorchus*. Pascoe (*l. c.* p. 311, note) discusses these genera of Linnæus and Fabricius, and concludes that as the characters of *Molorchus* given by Fabricius agree with *N. major* (Linn.), and not with *N. minor*, whilst Linnæus first *applied* the name of *Necydalis* to the latter, these species should be regarded as respectively the types of the two genera. [Pascoe says that Linnæus first characterized *Necydalis* in the 12th edition of the 'Systema Naturæ,' where the greater part of the species are heteromerous; but in reality the genus was characterized in the 10th edition, and in such a

manner as not to include the heteromerous forms, *N. major* and *minor* being the only species referred to it. It is evident that Linnæus added the heteromerous species to his genus *Necydalis* merely because he did not know what else to do with them; and at any rate *Molorchus* (Fab.) = *Necydalis* (Linn. ed. 10).]

Cremys (Pasc.). Pascoe (*l. c.* p. 316) recharacterizes this genus.

Pascoe (*l. c.* p. 319) proposes to change the following generic names employed in this group, but preoccupied elsewhere:—*Trichophorus* (Serv.) to *Crocidastus*; *Petalodes* (Newm.) to *Anatisis*; and *Conothorax* (J. Thoms.) to *Massicus*.

C. A. Dohrn remarks (Stett. ent. Zeit. 1867, pp. 437–445) upon some points in the synonymy of *Clytus hieroglyphicus* and *Cerambyx cerdo* and *heros*. With regard to the latter he is inclined to follow Mulsant's example and to apply the name of *C. cerdo* (Linn.) to *C. heros* (Scop.), and that of *C. scopoli* to *C. cerdo* of authors.

Purpuricenus barbarus and *P. dumerili* (Luc.) are ♂ and ♀ of the same species, according to Ernest Cotty. Cotty also notices the habits of *Hesperophanes affinis* (Luc.) (Mém. Soc. Linn. du Nord de Fr. 1866, p. 176).

Obrium bicolor (Kraatz). Notes on its occurrence near Vienna, by Löw, Verh. zool.-bot. Ges. in Wien, xvii. p. 748.

New genera:—

Chorothyse, g. n., Pascoe, Ann. & Mag. N. H. 3rd ser. xix. p. 307. Allied to *Psebium* (Pasc.); antennæ rather short, 12-jointed, scape very short; elytra short, hollowed out along the sutural margins; posterior tibiæ elongate, curved, compressed; abdomen short, 2 basal segments much longer than the rest.—Sp. *C. vesparia*, sp. n., Pasc. *l. c.* p. 308, South Africa.

Nephithea, g. n., Pascoe, *l. c.* p. 308. Allied to *Psebium*; forehead convex, not grooved, quadrate between the eyes; prothorax subcylindrical, narrowed behind; elytra abbreviated, hollowed out along the sutural margins; wings shorter than abdomen; posterior tibiæ elongate, linear.—Sp. *N. necydaloides*, sp. n., Pasc. *l. c.* p. 309, Natal.

Demomisis, g. n., Pascoe, *l. c.* p. 309. Allied to *Rhagiomorpha*; eyes entire, rounded; antennæ short, scape clavate, joint 3 longer than 4; elytra linear; anterior coxæ exserted, globose, approximate. Sp. *D. filum*, sp. n., Pasc. *l. c.* p. 310, West Australia.

Zorion, g. n., Pascoe, *l. c.* p. 310. Allied to *Molorchus*?; head attenuated behind the eyes; eyes small, deeply emarginate; prothorax constricted at base and apex, narrower behind; femora abruptly clavate.—Sp. *Callidium minutum* (Fab.) and *Obrium guttigerum* (Westw.).

Ossibia, g. n., Pascoe, *l. c.* p. 311. Allied to *Obrium*?; antennæ setaceous; eyes large, contiguous beneath; anterior coxæ globose. Sp. *O. fuscata*, sp. n. (Dej.), Pasc. *l. c.* p. 312, Senegal.

Nida, g. n., Pascoe, *l. c.* p. 312. Allied to *Rhopalophora*; joint 4 of antennæ shorter than 3 & 5; prothorax elongate, subcylindrical; mesothorax elongate; mesosternum narrow. Sp. *N. flavovittata*, sp. n., Pasc. *l. c.* p. 312, Pegu.

Nyphasia, g. n., Pascoe, *l. c.* p. 313. Allied to *Cordylomera*; interfemoral process broad, rounded in front; prothorax irregular, its sides unarmed; femora petiolate-clavate, constricted at apex. Sp. *N. torrida*, sp. n., Pasc. *l. c.* p. 313, Ceylon.

Idothalia, g. n., Pascoe, *l. c.* p. 314. Allied to *Callichroma*; antennæ short, gradually thickened, serrate, joints 4 & 5 obconic, last ovate or triangular; prothorax tuberculate at the sides; anterior and intermediate tibiæ with two minute apical spines. Sp. *I. femorata*, sp. n., Pasc. *l. c.* p. 314, Philippine Islands; *I. pyrrha*, sp. n., Pasc. ibid., Pegu.

Bivorestes, g. n., Pascoe, *l. c.* p. 315. Allied to *Clytus*; prothorax depressed, its sides angulated; antennæ subincrassate, linear, joints unarmed. Sp. *Clytus doctus* (White), and probably *Cerambyx interruptus* (Oliv.).

Thranodes, g. n., Pascoe, *l. c.* p. 315. Allied to *Clytus*; head tricarinate in front; antennæ short, claviform; prothorax globose; elytra flattened, not covering the abdomen. Type *Clytus stenothyreus* (Pasc.).

Thoris, g. n., Pascoe, *l. c.* p. 317. Allied to *Callirhoë*; prothorax oblong, irregular, tuberculate at the sides; femora petiolate-clavate; tarsi short, nearly equal in length. Sp. *T. eburifera*, sp. n., Pasc. *l. c.* p. 317, Queensland.

Brototyche, g. n., Pascoe, *l. c.* p. 317. Allied to *Anoplistes*; prothorax subquadrate, unarmed at the sides; anterior coxæ approximate; prosternum narrow, keeled; interfemoral process concealed by posterior coxæ. Sp. *B. adamsii*, sp. n., Pasc. *l. c.* p. 318, Chosan (Japan).

Thephantes, g. n., Pascoe, *l. c.* p. 318. Allied to *Phacodes*; antennæ thickened in the middle; prothorax ovate, somewhat depressed; femora abruptly clavate; posterior tarsi with joint 1 triangular. Sp. *T. clavatus*, sp. n., Pasc. *l. c.* p. 319, Australia.

Zoodes, g. n., Pascoe, *l. c.* p. 319. Allied to *Stromatium*; scape short, pyriform; prothorax convex, transverse, narrower behind, not excavated laterally. Sp. *Stromatium? maculatum* (White).

Streptolabis, g. n., Bates, Ent. M. Mag. iv. p. 23. (*Trachyderinæ*.) Body oblong, depressed, dilated behind; head small; eyes finely facetted, deeply emarginate; mandibles curved upwards at apex; terminal joints of palpi ovate, truncate; antennæ shorter than body, stout, joint 1 thick, clavate, remainder from 3 sulcated, dilated at apex, inner angles produced; thorax unarmed; elytra with a sutural tooth; prosternum narrow, tuberculate at apex; femora clavate, toothed beneath. Sp. *S. hispoides*, sp. n., Bates, *l. c.* p. 23, Ega.

Æchmutes, g. n. (Pasc. MS.), Bates, *l. c.* p. 23. Allied to *Rhinotragus* and *Erythroplatys*; dilated behind; muzzle elongated; outer lobe of maxillæ much elongated; eyes nearly approximate in front; antennæ short, middle joints much dilated, with their angles produced inwards, joints 2 & 4 with a fringe of strong bristles outside; elytra undulato-truncate at apex, spined at each end of the truncature. Sp. *Æ. lycoides*, sp. n., Bates, *l. c.* p. 23, Ega.

Pandrosos, g. n., Bates, *l. c.* p. 23. Allied to *Rhinotragus*; slender, linear; muzzle shorter and wider; eyes widely separate in front; antennæ filiform, thickening towards apex and subserrated. Sp. *R. exilis* (White).

Argyrodines, g. n., Bates, *l. c.* p. 24. Allied to *Cosmisoma*; external maxillary lobe and last joint of palpi much elongated; thorax constricted in front and behind, the middle portion forming a tumid mass on each side; elytra constricted in the middle; legs short, posterior longest. Sp. *A. pulchella*, sp. n., Bates, *l. c.* p. 24, Ega.

Chlorethe, g. n., Bates, *l. c.* p. 24. Allied to *Orthostoma*; outer lobe of maxillæ short and broad; joints 3–5 of antennæ thickened; femora simple;

tibiæ compressed, bicalcarate at apex; tarsi slender, joint 1 in posterior sublinear. Sp. *C. ingæ*, sp. n., Bates, *l. c.* p. 24, Ega.

Microspiloma, g. n., Bates, *l. c.* p. 24. Allied to *Heterops*; muzzle elongate; palpi truncated; joints 3 & 5 of antennæ dilated, coarsely setose, unarmed; thorax spined; elytra cylindrical, unarmed at apex, with white spots; mesosternum with a large smooth median tubercle. Sp. *M. dorilis*, sp. n., Bates, *l. c.* p. 25, Ega.

Atharsus, g. n., Bates, *l. c.* p. 25. Allied to *Sphærion*; antenniferous tubercles obsolete; joints 3 & 5 of antennæ with short apical spines; legs short, setose; elytra unarmed. Sp. *A. nigricauda*, sp. n., Bates, *l. c.* p. 25, Tapajos.

Terpnissa, g. n., Bates, *l. c.* p. 25. Allied to *Sphærion*; joints 3–5 of antennæ spined at apex; legs elongate, femora clavate; prosternum very narrow; elytra with a spine near apex. Sp. *T. listropternia*, sp. n., Bates, *l. c.* p. 25, Tapajos.

Phrynocris, g. n., Bates, *l. c.* p. 26. Allied to *Achryson*; muzzle short; antenniferous tubercles prominent; joint 1 of antennæ with a tubercle near apex beneath; thorax subquadrate, spined at the sides; elytra spined at apex. Sp. *P. notabilis*, sp. n., Bates, *l. c.* p. 26, Ega.

Zatheeus, g. n., Bates, *l. c.* p. 26. Allied to preceding; thorax unarmed; elytra with 2 spines at apex; femora abruptly clavate. Sp. *Z. graphites*, sp. n., Bates, *l. c.* p. 26, Ega.

Aræotis, g. n., Bates, *l. c.* p. 26. Allied to *Obrium*; lower lobe of eyes very large; thorax elongate; sides with a minute tubercle behind middle; elytra rounded at apex; legs long, femora clavate, posterior elongated. Sp. *A. fragilis*, sp. n., Bates, *l. c.* p. 26, Tapajos.

Pyrgotes, g. n., Bates, *l. c.* p. 27. Allied to *Piezocera* and *Hemilissa*; head and thorax narrow, the latter elongated, with an obtuse lateral and a dorsal prominence far behind middle; antennæ very stout, joints dilated, bicarinated, with apical angles acute; legs short, tibiæ compressed, wide at apex. Sp. *P. æneus*, sp. n., Bates, *l. c.* p. 27, Ega.

Dodecosis, g. n., Bates, *l. c.* p. 27. Allied to *Gracilia*; antenniferous tubercles very large, acutely toothed; palpi very short, truncated at apex; antennæ very long, distinctly 12-jointed, 3 shorter than 4; thorax unarmed; prosternum very narrow. Sp. *D. saperdina*, sp. n., Bates, *l. c.* p. 27, Tapajos.

Niophis, g. n., Bates, *l. c.* p. 27. Allied to *Gracilia*; palpi moderate, subsecuriform; antenniferous tubercles not prominent; antennæ stout, very long, fringed; elytra terminating in a long spine. Sp. *N. coptorhina*, sp. n., Bates, *l. c.* p. 28, Santarem, Tapajos.

Atenizus, g. n., Bates, *l. c.* p. 28. Allied to *Smodicum*; palpi elongated; head with a distinct neck, with a large tubercle on the vertex; thorax ovate, unarmed; anterior and middle coxæ exserted, contiguous. Sp. *A. laticeps*, sp. n., Bates, *l. c.* p. 28, Pará and Santarem.

Callidium pilicolle, sp. n., Thomson, Skand. Col. viii. p. 29 (= *clavipes*, Gyll.).

Strongylurus ceresioides, sp. n., Pascoe, Journ. Linn. Soc. ix. p. 308, Tasmania.

Molorchus mulsanti, sp. n., Stierlin, Mitth. schw. ent. Ges. ii. p. 30, Sicily.

Prionides.

Pascoe (Ann. Mag. N. H. 3rd ser. xix. p. 413, note) remarks on the characters of *Notophysis* (Serv.), and also (*l. c.* p. 411, note) that the generic

names *Chiasmus* and *Hephialtes* (J. Thoms.) are preoccupied. The former he proposes to name *Chiasmetes*. *Cacosceles* (Newm.) is too near *Cacoscelis* (Chevr.).

Tragosoma depsarium. Habits briefly noticed by Kawall, Stett. ent. Zei 1867, p. 124.

Macrodontia cervicornis. Lucas describes the supposed pupa of this species. Bull. Soc. Ent. Fr. 1867, p. lxxxii.

Prionus coriarius. Pelikan notices a malformation of this species having the left anterior tibia doubled; the second tibia bears a two-jointed tarsus without claws. Sitzungsb. zool.-bot. Ges. in Wien, 1867, p. 116.

Prionus coriarius. Perty (Mitth. naturf. Ges. in Bern, 1867, p. 308, fig. 11) describes and figures a ♀ of this species with two small and deformed legs on the right side, and a spine at the base of one of these, which he regards as the rudiment of a third limb.

New genera:—

Sarmydus, g. n., Pascoe, Ann. Mag. N. H. 3rd ser. xix. p. 410. Allied to *Dorycera*; antennæ compressed, joint 3 longer and broader than scape; prothorax transverse, laterally spinose; femora and tibiæ compressed; prosternum produced. Sp. *S. antennatus*, sp. n., Pascoe, *l. c.* p. 410, Sarawak.

Xaurus, g. n., Pascoe, *l. c.* p. 410. Allied to *Tragosoma*; head not much produced below the antennæ; antennæ short, joint 3 shorter than scape; prothorax irregular, spined at the sides; metathoracic parapleura oblong-quadrate. Sp. *X. depsarius*, sp. n., Pascoe, *l. c.* p. 410, Morty.

Nepiodes, g. n., Pascoe, *l. c.* p. 410. Allied to *Ægosoma*; mandibles elongate; scape very short; eyes large, approximate above; prothorax transversely subquadrate, unarmed. Sp. *N. cognatus*, sp. n., Pascoe, *l. c.* p. 410, Sarawak.

Zarax, g. n., Pascoe, *l. c.* p. 410. Allied to *Macrotoma*; palpi very short; antennæ incrassate, short, unarmed, scape very short; tarsi very short, channelled beneath.—Sp. *Z. eurypodioides*, sp. n., Pascoe, *l. c.* p. 410, Sarawak.

Omotagus, g. n., Pascoe, *l. c.* p. 410. Allied to *Hystatus*; tarsi linear, joints 1–3 biscopuliferous at apex beneath; mandibles with two large teeth. Sp. *O. lacordairii*, sp. n., Pascoe, *l. c.* p. 410, Dorey.

Elaptus, g. n., Pascoe, *l. c.* p. 413. Allied to *Sarmydus* (Pasc.); antennæ longer than body, joints 3 & 4 equal; eyes large; prothorax transverse, lateral keel slightly angulated behind the middle; femora short; tibiæ not dentate; abdominal segments equal in length. Sp. *E. simulator*, sp. n., Pasc. *l. c.* p. 413, Cape York.

Cantharoplatys, subg. n., Westwood, Proc. Ent. Soc. 1865, p. 133. Allied to *Cantharocnemis*; body more depressed; mandibles much stouter, armed with a subbasal tooth; antennæ short; elytra cicatricose, lateral angles very prominent. Sp. *C. felderi*, sp. n., Westw. *l. c.* p. 134, White Nile.

Cantharoctenus, subg. n., Westwood, *l. c.* p. 134. Allied to *Cantharocnemis*; prothorax more cylindrical; antennæ twice as long, 18-jointed, joints doubly pectinated. Sp. *C. burchellii*, sp. n., Westw. *l. c.* p. 134, Damara land.

New species:—

Prionus gerrardi, Pascoe, *l. c.* p. 411, Madagascar; *P. tetanicus*, Pasc. *l. c.* p. 412, Chosan (Japan).

Hoplideres lævicollis, Pascoe, *l. c.* p. 412, Madagascar.
Ægosoma lacertosum, Pascoe, *l. c.* p. 413, Silhet.
Cantharocnemis livingstonii, Westwood, Proc. Ent. Soc. 1865, p. 133, Zambesi.

PHYTOPHAGA.

The Scandinavian forms of this group are described by C. G. Thomson (Skand. Col. viii. pp. 103–324). He follows closely the general arrangement adopted in his synopsis published in vol. i. of the same work, but makes some alterations both in the sequence and number of the genera, many of the generic groups proposed by Foudras and others being admitted, especially among the Halticides.

Criocerides.

C. G. THOMSON (Skand. Col. viii.) suppresses the genus *Plateumaris* proposed by him for *Don. nigra* (Fab.), and restores that species to *Donacia*.
Rhæbus beckeri (Suffr.). Notes by Becker, Bull. Soc. Nat. Mosc. xl. 1. p. 109.

New species :—

Donacia platysterna, Thomson, Skand. Col. viii. p. 118, Scania; *D. geniculata*, Thoms. *l. c.* p. 123 (=*sericea*, Gyll. ex parte), Sweden; *D. lævicollis*, Thoms. *l. c.* p. 125 (=*sericea*, Gyll. ex parte), Sweden.
Lema milleriana, Wollaston, Col. Hesp. p. 142, and *L. clarkiana*, Woll. *l. c.* p. 143, Cape Verde Islands.
Crioceris luridotestacea, Wollaston, *l. c.* p. 144, Cape Verde Islands (S. Vicente).
Rhæbus sagroides, Solsky, Horæ Soc. Ent. Ross. iv. p. 181, Astrachan.
Rhæbus beckeri, Suffrian, Stett. ent. Zeit. 1867, p. 143, Astrachan.

Chrysomelides.

BALY has published the continuation of his "Phytophaga Malayana" (Trans. Ent. Soc. 3rd ser. iv. pp. 77–300), the first part of which appeared in 1865 (see 'Record,' 1865, pp. 393 & 510). The species here described belong chiefly to the *Eumolpides*; but a few *Chrysomelides* (s. str.) are also noticed. The species characterized in Baly's pamphlet published in 1864 (see 'Record,' 1864, p. 336) are here fully described, and in some cases figured, along with several species of other authors, as indicated below :—

Aoria (*Adoxus*) *bowringii* (Baly), pl. 4. fig. 1; *Stasimus rugosus* (Baly), pl. 4. fig. 2; *Piomera brachialis* (Baly), pl. 4. fig. 3; *Metaxis sellata* (Baly), pl. 4. fig. 4; *Apolepis aspera* (Baly), pl. 4. fig. 7; *Lepina inconspicua* (Baly), pl. 4. fig. 6; *Bromius evanescens* (Baly), pl. 5. fig. 3; *Chrysochus pulcher* (Baly), pl. 5. fig. 4; *Scelodonta curculionoides* (Westw.), pl. 5. fig. 8; *Chrysapida* (*Colaspis*) *attelaboides* (Erichs.)=*adonis* (Baly), pl. 5*. fig. 4; *Rhyparida* (*Pyropida*) *sumptuosa* (Baly), pl. 5*. fig. 2; *Dermorhytis* (*Crypt.*) *ænea* (Wied.), pl. 5*. fig. 7; *Chalcolampra* 10-*pustulata* (Baly), pl. 5*. fig. 3;

Æsernia whitei (Baly), pl. 5*. fig. 6; and *Stethomela variabilis* (Baly), pl. 5*. fig. 8.

Suffrian (Arch. f. Naturg. 1867) remarks upon the characters and synonymy of the following known species of this group:—Chrysomela *semilutea* (Stål), *insulana* (J. Duv.), *nydia* (Stål), *testacipes* (Stål), *sexguttata* (Chevr.), *cubana* (Stål), *apicicornis* (Chevr.), *poeyi* (Chevr.), *cruentipennis* (J. Duv.), and *splendida* (Chevr.)=*splendicans* (Stål).

Fairmaire (Ann. Soc. Ent. Fr. 4e sér. vii.) notices the following species of this group from Algeria:—*Clythra* (*Labidostomis*) *trifoveolata* (Desbr.), *Cryptocephalus nigridorsum* (Chevr.), p. 412; *C. lineellus* (Suffr.), p. 414; *Stylosomus tamaricis* (H.-Sch.) and *S. minutissimus* (Germ.), pp. 414, 415.

Labidostomis lineola (Redt.)=*decipiens* (Fald.), according to Abeille de Perrin, Ann. Soc. Ent. F. 4e sér. vii. p. 70.

Cryptocephalus nigridorsum (Chev.)=var. *alboscutellatus* (Suffr.) according to Seidlitz, Berl. ent. Zeits. 1867, p. 434.

Guérin-Méneville notices the copulation of *Timarcha* as early as February. Bull. Soc. Ent. Fr. 1867, p. ii.

Gabriel Tappes publishes a note on the development of the *Cryptocephali*. L'Abeille, iii. pp. lxxxii–lxxxiv.

Lina lapponica. Found only on birches. Kawall, Stett. ent. Zeit. 1867, p. 124.

Paria sex-notata (Say). Bred by Walsh from the cabbage-gall of the willow. Proc. Ent. Soc. Phil. vi. p. 270.

New genera:—

Stethotes, g. n., Baly, Trans. Ent. Soc. 3rd ser. iv. p. 254. Allied to *Nodostoma*; thorax not bordered laterally, its sides nearly perpendicular. Known sp. *Pyropida elegantula* (Baly), pl. 5*. fig. 2, *P. nigrocærulea* (Baly), and *P. lateralis* (Baly). New sp. *S. apicicornis*, Baly, *l. c.* p. 256, Aru Islands; *S. consimilis*, Baly, *l. c.* p. 257, Batchian, Bouru; *S. longicollis*, Baly, ibid., Java; *S. tarsata*, Baly, *l. c.* p. 258, *S. nigritula*, Baly, ibid., and *S. atra*, Baly, *l. c.* p. 259, Dorey.

Aulacia, g. n., Baly, *l. c.* p. 268. Allied to *Colaspoides*; thorax transverse, as wide as elytra, which are attenuate behind, irregularly punctate-striate. New sp. *A. diversa*, Baly, *l. c.* p. 268, Singapore; *A. fulviceps*, Baly, ibid., *A. femorata*, Baly, *l. c.* p. 269, and *A. bipustulata*, Baly, ibid., Sarawak.

New species:—

Colasposoma. Baly (*l. c.*) describes 7 new species of this genus, namely:—*C. cumingii*, p. 271, Philippine Islands; *C. distinctum* and *C. nitidum*, p. 272, Coup; *C. mutabile*, p. 273, Java, Borneo, Malacca, Timor; *C. nigricentre*, ibid., Pulo Penang; *C. propinquum*, p. 274, Borneo; and *C. rugulosum*, p. 275, Malacca.

Cryptocephalus astracanicus, Suffrian, Stett. ent. Zeit. 1867, p. 310, Astrachan.

Cryptocephalus pallidicornis, Suffrian, Zeitschr. ges. Naturwiss. xxvii. p. 113, Illinois.

Cryptocephalus erosus, Seidlitz, Berl. ent. Zeitschr. 1867, p. 189, Spain; *C. podager*, Seidl. *l. c.* p. 190, Sierra Guadarrama; *C. limbifer*, Seidl. ibid., Sierra Nevada.

Cryptocephalus tamaricis, Solsky, Horæ Soc. Ent. Ross. iv. p. 183, Astrachan.

Cryptocephalus longicornis (scr. *longicornes*), Thomson, Skand. Col. viii. p. 311, Œland.

Cryptocephalus pallidocinctus, Fairmaire, Ann. Soc. Ent. Fr. 4e sér. vii. p. 412, Algeria; *C. discicollis*, Fairm. *l. c.* p. 413, Algeria.

Stylosomus bipartitus, Fairmaire, *l. c.* p. 414, Algeria.

Loxopleurus latus, Baly, *l. c.* p. 77, pl. 3. fig. 7, Key Island, Batchian.

Aulexis wallacei, Baly, *l. c.* p. 81, pl. 4. fig. 5, Sarawak, Singapore, Penang, Tondano; and *A. varians*, Baly, *l. c.* p. 82, Sarawak.

Demotina. Baly (*l. c.*) describes the following new Malasian species:—*D. serraticollis*, p. 85, Penang; *D. nigricollis*, ibid., Celebes; *D. murina*, p. 86, Java; *D. bicittata*, ibid., and *D. ornata*, p. 90, pl. 4. fig. 8, Ceram; *D. grisea*, p. 87, Sarawak; *D. wallacei*, ibid., *D. parvula*, p. 89, and *D. rufopicea*, p. 90, Menado; *D. pauperata*, p. 88, Dorey; and *D. jansoni*, p. 89, Waigiou.

Aulacolepis decorata, Baly, *l. c.* p. 93, pl. 5, fig. 8, Sumatra.

Pachnephorus clypeatus, Baly, *l. c.* p. 94, Gilolo; *P. vitticollis*, Baly, *l. c.* p. 95, pl. 5. fig. 2, Batchian; and *P. convexicollis*, Baly, ibid., Macassar.

Bromius cupreatus, Baly, *l. c.* p. 98, Singapore.

Corynodes. Baly (*l. c.*) describes the following new Malasian species:—*C. monstrosus*, p. 100, pl. 5. figs. 5 & 6 (=*tuberculatus*, Clark), *C. aureipennis*, p. 102, *C. cæruleatus*, p. 122, *C. igneipennis*, ibid., and *C. trilobatus*, p. 129, pl. 5. fig. 7, Pulo-Penang; *C. viridanus*, p. 105, and *C. lorquinii*, p. 118, Celebes; *C. cupreatus*, p. 107, Macassar; and *C. propinquus*, p. 113, Waigiou.

Scelodonta granulosa, Baly, *l. c.* p. 158, Sarawak and Celebes.

Chrysopida insignis, Baly, *l. c.* p. 161, and *C. murina*, Baly, *l. c.* p. 162, Philippine Islands.

Colaspis nigricornis, Suffrian, *l. c.* p. 325, Cuba; *C. deleta*, Suffr. *l. c.* p. 327, Costa Rica.

Colaspoides. Baly (*l. c.*) describes the following new Malasian species of this genus:—*C. similima*, p. 139, and *C. laportei*, p. 148, Malacca and Singapore; *C. varians*, p. 135, Java; *C. regularis*, p. 136, *C. modesta*, ibid., *C. biplagiata*, p. 137, *C. robusta*, p. 139, *C. fuscoænea*, p. 140, *C. viridimarginata*, p. 142, *C. insignis*, ibid., *C. cærulipes*, p. 144, *C. tuberculata*, p. 150, and *C. violacea*, p. 151, Borneo and Sarawak; *C. inornata*, p. 137, Penang; *C. cuprea*, p. 138, and *C. cognata*, p. 149, Pulo-Penang; *C. micans*, p. 140, and *C. viridana*, p. 146, Celebes; *C. puncticeps*, p. 141, *C. elegans*, p. 143, *C. picea*, p. 151, *C. parvula*, p. 152, and *C. quadripartita*, ibid., Singapore; *C. cærulescens*, p. 145, Malacca; *C. rafflesii*, p. 147, Sumatra; and *C. philippinensis*, p. 148, Manilla.

Rhyparida. The following new species are described by Baly (*l. c.*):—*R. puncticollis*, p. 169, Menado and Tondano; *R. confusa*, p. 187, Ceram, Gilolo, Batchian; *R. instabilis*, ibid., Dorey and Mysol; *R. labiata*, p. 171, *R. purpurea*, p. 174, *R. fraternalis*, ibid., *R. cupreata*, p. 177, *R. mœsta*, p. 178, *R. picea*, p. 179, *R. amabilis*, p. 193, and *R. parvula*, p. 208, New Guinea; *R. basalis*, p. 168, *R. impressicollis*, p. 176, *R. frontalis*, p. 181, *R. variabilis*, p. 182, *R. obsoleta*, p. 185, and *R. picta*, p. 200, Dorey; *R. aruensis*, p. 186, Aru Islands; *R. inconspicua*, p. 194, *R. sulcicollis*, p. 199, and *R. nucea*, p. 204, Sulu Islands; *R. semipunctata*, p. 169, *R. separata*, p. 191, *R. opacicollis*, p. 195 (=*impuncticollis*, Baly *olim*), and *R. brunnea*, p. 196, Batchian; *R.*

scutellata, p. 175, *R. intermedia*, p. 188, *R. bipustulata*, p. 190, and *R. elevata*, p. 205, Waigiou; *R. submetallica*, p. 176, *R. distincta*, p. 192, and *R. diversa*, ibid., Tondano; *R. tibialis*, p. 183, *R. approximata*, p. 184, *R. suspecta*, p. 190, and *R. laterivittata*, p. 207, Mysol; *R. fulvipes*, p. 189, and *R. placida*, p. 190, Ké Island; *R. fulvescens*, p. 194, Gilolo; *R. angulicollis*, p. 211, Ceram; *R. torquinii*, p. 166, pl. 5*. fig. 1, and *R. celebensis*, p. 210, Celebes; *R. laticollis*, p. 178, *R. tumifrons*, p. 198, and *R. pinguis*, p. 209, Borneo; *R. wallacei*, p. 200, Sarawak; *R. amboinensis*, p. 204, Amboyna; *R. javanensis*, p. 196, *R. obliterata*, p. 197, and *R. horsfieldii*, p. 202, Java; *R. ovalis*, p. 209, Sumatra; and *R. lateralis*, p. 210, Manilla.

Nodostoma. Baly (*l. c.*) describes the following new Malasian species of this genus:—*N. trivittatum*, p. 213, *N. apicale*, ibid., *N. proximum*, p. 214, *N. wallacei*, p. 216, *N. laterale*, p. 218, *N. humerale*, p. 219, *N. placidum*, 221, *N. piceomaculatum*, p. 222, *N. æmatum*, p. 226, *N. piceum*, p. 227, *N. bipustulatum*, ibid., *N. cupripenne*, p. 231, *N. cupreatum*, ibid., *N. aureocupreum*, p. 232, *N. collare*, p. 234, *N. nitidum*, p. 237, and *N. tibiale*, p. 245, Borneo and Sarawak; *N. javanense*, p. 224, and *N. basale*, p. 238, Java; *N. viride*, p. 236, and *N. imperiale*, p. 246, Sumatra; *N. lateripunctatum*, p. 230, and *N. anthracinum*, p. 247, Singapore; *N. æneipenne*, p. 235, *N. æneomicans*, p. 237, *N. nigrum*, p. 248, *N. nigritum*, ibid., *N. purpureipenne*, p. 249, and *N. frontale*, p. 253, Malacca; *N. elegantulum*, p. 216, *N. gratum*, p. 224, *N. strigicolle*, p. 240, and *N. castaneum*, p. 246, Celebes; *N. fulvipes*, p. 228, New Guinea and Sulu Islands; *N. pictum*, p. 225, and *N. affine*, p. 243, Aru Islands; *N. tuberculatum*, p. 229, and *N. nigroæneum*, p. 239, Tondano; *N. piceipes*, 241, Salwatty; *N. pulchellum*, p. 242, New Guinea, Waigiou; *N. pallidipes*, p. 250, Dorey; *N. amboinense*, ibid., Amboyna; *N. viridiornatum*, p. 251, Batchian; and *N. diversipes*, p. 253, Mysol.

Nodina (Motsch.). Baly (*l.c.*) describes the following new species:—*N. gigas*, p. 260, and *N. fulvipes*, ibid., Borneo; *N. separata*, p. 261, Sarawak; *N. minuta*, ibid., Sulu Islands; and *N. ceramensis*, p. 262, Ceram.

Geloptera eximia, Baly, *l. c.* p. 266, and *G. purpurata*, Baly, *l. c.* p. 267, Celebes.

Dermorhytis. Baly (*l. c.*) describes the following new species of this genus:—*D. philippinensis*, p. 263, Philippine Islands; *D. apicalis*, p. 264, Borneo; and *D. picipes*, p. 265, Java.

Timarcha lomnickii, L. Miller, Verh. zool.-bot. Ges. in Wien, xvii. p. 503, Galicia.

Chrysomela optica, Suffrian, Arch. Naturg. 1867, p. 293, *C. rubropustulata*, Suffr. *l. c.* p. 295, *C. hexaspila*, Suffr. *l. c.* p. 296, *C. amarella*, Suffr. *l. c.* p. 298, Cuba.

Chrysomela seriatopora, Fairmaire, Ann. Soc. Ent. Fr. 4e sér. vii. p. 415, Algeria.

Phyllodecta cavifrons, Thomson, Skand. Col. viii. p. 278, Sweden.

Paropsis ioptera, Baly, *l. c.* p. 279, Dorey and Mysol; *P. nigripicta*, Baly, ibid., Aru Islands, New Guinea; *P. wallacei*, Baly, *l. c.* p. 280, Dorey; and *P. 5-maculata*, Baly, ibid., Batchian.

Phyllocharis viridiænea, Baly, *l. c.* p. 286, Ceram; *P. abdominalis*, Baly, ibid., Dorey.

Stethomela consimilis, Baly, *l. c.* p. 291, Amboyna, Ceram; *S. grandis*, Baly, *l. c.* p. 292, Dorey; *S. quadripustulata*, Baly, *l. c.* p. 294, Mysol.

Chalcomela intermedia, Baly, *l. c.* p. 296, Mysol, Ceram; *C. rubripustulata*, Baly, *l. c.* p. 297, New Guinea; *C. nigripennis*, Baly, ibid., Waigiou.

Plagiodera marginata, Baly, *l. c.* p. 299, New Guinea; *P. pallida*, Baly, ibid., Amboyna.

Galleruciles.

Allard has concluded his monograph of the European *Halticides* (L'Abeille, iii. pp. 321–508). The portion requiring to be noticed here includes the genus *Dibolia* (Latr.), 16 sp., 1 new, and *Psylliodes* (Lat.), 50 sp., 3 new. A supplement contains some notices of species belonging to genera treated of in earlier parts of the work.

Suffrian (Arch. f. Naturg. 1867) remarks upon the characters and synonymy of the following known species of this group:—Galleruca *opacipennis* (J. Duv.); Diabrotica *innuba* (Fab.), *bivittata* (Fab.), *pulchella* (Dej.), *thoracica* (Fab.); Cerotoma *denticornis* (Fab.); Luperus *malachioides* (Chevr.); and Blepharida *irrorata* (Chevr.).

Galleruca calmariensis (Linn.). Cornelius describes the development of this species, Stett. ent. Zeit. 1867, pp. 213–214.

Haltica alternata (Ill.), var., bred by Walsh from the gall *Salicis brassicoides*. Proc. Ent. Soc. Phil. vi. p. 270.

Galleruca albicornis (Wiedem.). Perty describes an example wanting the left anterior femur (Mitth. naturf. Ges. in Bern, 1867, p. 307).

On the species of *Haltica* injurious to the Colza plant in the Canton de Vaud, see Forel, Bull. Soc. Vaud. Sci. Nat. ix. pp. 72–73. (See p. 198.)

New genera:—

Argosomus, g. n., Wollaston, Col. Hesp. p. 152. Allied to *Sphæroderma*; head and prothorax narrower; eyes and antennæ more approximated; base of elytra broader than prothorax, sinuated; tarsi not dilated at base. Sp. *A. epilachnoides* and *A. obscuripennis*, sp. n., Woll. *l. c.* p. 153, Cape Verde Islands.

Syphaxia, g. n., Baly, Trans. Ent. Soc. Lond. 3rd ser. ii. p. 471. Allied to *Monocesta*; claws unarmed; body short, very convex. Sp. *M. spectanda* (Clark).

Chorina, g. n., Baly, *l. c.* p. 471. Allied to preceding; body elongate, parallel-sided; claws simple. Sp. *Monocesta cincta* and *obliquenotata* (Clark).

New species:—

Adimonia ælandica (Gyll. MS.), Thomson, Skand. Col. viii. p. 147, Œland.

Cœlomera liturata, Suffrian, Arch. f. Naturg. 1867, p. 300, Cuba.

Galleruca venustula (Mus. Berol.), Suffrian, *l. c.* p. 303, Cuba.

Galeruca suturalis, Thomson, *l. c.* p. 151, Scandinavia.

Galeruca turcica, Stierlin, Mitth. Schw. ent. Ges. ii. p. 226, Bagdad.

Diabrotica annulata, Suffrian, *l. c.* p. 307, *D. impressa*, Suffr. *l. c.* p. 309, *D. relicta* (Klug), Suffr. *l. c.* p. 310, *D. loricata* (Klug), Suffr. *l. c.* p. 311, *D. cyanospila*, Suffr. *l. c.* p. 313, *D. semicyanea*, Suffr. *l. c.* p. 314, Cuba.

Luperus placidus (Mus. Berol.), Suffrian, *l. c.* p. 320, Cuba.

Luperus acutipennis, Fairmaire, Ann. Soc. Ent. Fr. 4e sér. vii. p. 415, Morocco.

Cerotoma. Baly (*l. c.*) describes the following new species of this genus:—*C. de gandei*, p. 472, Ecuador; *C. heterocera*, p. 472, *C. congener*, p. 473, *C. limbifera*, p. 475, *C. contubernalis*, ibid., *C. pulchra*, p. 476, *C. perplexa*, ibid., and *C. alternata*, p. 477, Amazons; *C. excavata*, p. 474, *C. amazona*, p. 475, and *C. erichsoni*, p. 478, Nauta; *C. transversofasciata*, p. 474, San Paulo; *C. deyrollei*, p. 477, Columbia; *C. quadripustulata*, p. 477, Guatemala, Mexico; and *C. salvinii*, p. 478, Panama.

Calomicrus tæniatus, Wollaston, Col. Hesp. p. 145, Cape Verde Islands.

Haltica dohrniana, Wollaston, *l. c.* p. 146, *H. læviceps*, Woll. *l. c.* p. 147, *H. subatra*, Woll. *l. c.* p. 148, *H. lævissima*, Woll. *l. c.* p. 149, and *H. signatifrons*, Woll. *l. c.* p. 150, Cape Verde Islands.

Longitarsus stenocyphon, Wollaston, *l. c.* p. 150, and *L. laxicornis*, Woll. *l. c.* p. 151, Cape Verde Islands.

Dibolia phœnicia, Allard, L'Abeille, iii. p. 424, Syria.

Psylliodes persica, Allard, *l. c.* p. 457, Bagdad; *P. lauticollis*, Allard, *l. c.* p. 468, south of France; *P. saulcyi*, Allard, *l. c.* p. 469, Syria.

Psylliodes sicula, Stierlin, *l. c.* p. 228, Sicily.

Psyllodes cytisi, Becker, Bull. Soc. Nat. Mosc. xl. 1. p. 113, Sarepta.

Plectroscelis schäflini, Stierlin, *l. c.* p. 31, Sicily.

Phyllotreta dilatata, Thomson, *l. c.* p. 192, Scania.

Plectroscelis lævicollis, Thomson, *l. c.* p. 229 (=*H. dentipes*, Gyll., var. *d*), Småland.

Aphthona pulcherrima, Allard, *l. c.* p. 489, Algeria; *A. sardea*, Allard, *l. c.* p. 490, Sardinia; *A. viridula*, Allard, *l. c.* p. 491, Syria.

Thyamis nebulosa, Allard, *l. c.* p. 495, Corsica.

Graptodera hampei, Allard, *l. c.* p. 499, Crimea.

Balanomorpha nitens, Allard, *l. c.* p. 501, Algeria.

Cassidides.

Cassida salsolæ (Beck.)=*desertorum* (Gebl.), according to Becker, Bull. Soc. Nat. Mosc. xl. 1. p. 109.

Cassida kœchlini, sp. n., Marseul, L'Abeille, iii. p. 68, Sahara.

Coccinellidæ.

The Scandinavian members of this family are described by C. G. Thomson (Skand. Col. viii. pp. 325–396). He divides the group into two tribes, *Rhizobiina* and *Coccinellina*, the latter including the subtribes *Coccinellides*, *Cynegetides*, *Chilocorides*, and *Scymnides*. Several of the genera of modern authors are accepted by Thomson.

Coccinella lyncea (Muls.)=var. 12-*pustulata* (Fab.), according to Seidlitz, Berl. ent. Zeits. 1867, p. 434.

Coccinella 24-*punctata*. The larva feeds on the leaves of carnations &c. Kawall, Stett. ent. Zeit. 1867, p. 123.

Letzner (Jahresber. schles. Ges. vaterl. Cultur, xliv. pp. 161–169) gives a detailed description of *Coccinella undecimnotata* (Schneid.) in all its stages, and of the variations of the imago.

New species:—

Coccinella artemisiæ, Wollaston, Col. Hesp. p. 158, Cape Verde Islands.

Micraspis tetradyma, Fairmaire, Ann. Soc. Ent. Fr. 4e sér. vii. p. 416, Morocco.

Rhizobius nigricentris, Thomson, Skand. Col. viii. p. 331, Gothland and Œland.

Scymnus epistemoides, Wollaston, *l. c.* p. 276, Porto Santo.

Scymnus carbonarius, Wollaston, *l. c.* p. 159, *S. pallidulus*, Woll. *l. c.* p. 160, *S. nigropictus*, Woll. ibid., *S. posticus*, Woll. *l. c.* p. 161, *S. floricola*, Woll. *l. c.* p. 162, *S. fractus*, Woll. *l. c.* p. 163, *S. picturatus*, Woll. *l. c.* p. 164; *S. maritimus*, Woll. *l. c.* p. 165, *S. inconspicuus*, Woll. *l. c.* p. 166, and *S. depressiusculus*, Woll. *l. c.* p. 167, Cape Verde Islands.

HYMENOPTERA.

A. *Separate Work.*

Saussure, H. de, and Sichel, J. Reise der Oesterreichischen Fregatte Novara um die Erde. Zoologie, Band ii. Hymenoptera. With a Supplement by J. Sichel. Vienna, 1867, pp. 156, with 4 plates.

In this part of the Zoology of the 'Novara' the authors describe the Aculeate Hymenoptera (exclusive of the Ants) collected on that voyage. Saussure treats of the Vespidæ and Fossoria, and Sichel (pp. 141–156) of the Bees. The latter also describes a new species of *Bembex*.

B. *Papers published in Journals &c.*

Buckley, S. B. Descriptions of new species of North-American Formicidæ. Proc. Entom. Soc. Philad. vol. vi. pp. 152–172 and 335–350: 1867.

The author has employed several names, such as *Formica atra* and *Myrmica rubra*, which had been used by previous authors. He has also treated *Atta* in part as a subgenus of *Myrmica* and *Œcodoma* and in part as an independent genus—a proceeding which is not very intelligible.

Chevrier, Frédéric. Hyménoptères nouveaux ou rares du Bassin du Léman. Mittheil. schweiz. entom. Gesellsch. Band ii. pp. 229–235: August 1867.

Cornelius, —. Zweite Notiz über Eichengallen (*Cynips terminalis*, Fab.). Stettiner entom. Zeitung, 1867, pp. 63–64.

Cresson, E. T. Notes on the Pompilidæ of North America. Trans. Amer. Ent. Soc. vol. i. pp. 85–150.

Frauenfeld, G. von. (See "Insecta.")

Gerstäcker, A. Die Arten der Gattung *Nysson*, Latr. Abhandl. naturf. Gesellsch. Halle, x. pp. 71–122: 1867.

——. Ueber die Gattung *Oxybelus*, Latr., und die bei Berlin vorkommenden Arten derselben. Zeitschrift für die ge-

sammten Naturwissenschaften, Band xxx. pp. 1–96: July 1867.

Besides the portion strictly relating to the genus *Oxybelus*, this paper contains some general remarks on the classification of Hymenoptera and on the inequality in the facets of the eyes of Insects.

Hagens, — von. Ueber Ameisen mit gemischten Colonien. Berliner entom. Zeitschrift, 1867, pp. 101–108.

Haimhoffen, Gustav von. Ueber die Eichengalle von *Cynips coriaria*, Hart. Verhandl. zool.-bot. Ges. in Wien, Band xvii. pp. 527–530.

Healy, Charles. Observations on the œconomy of the Saw-fly (*Phyllotoma aceris*, M'L.) that mines the leaves of Maple. Ent. Monthly Mag. vol. iv. pp. 105–107.

Jaennicke, F. Zur Hymenopteren-Fauna der Umgegend von Frankfurt a. M. Berliner entom. Zeitschrift, 1867, pp. 141–155.

Contains a list of species, with indications of localities and degrees of abundance or rarity, and descriptions of three new species of Ichneumonidæ.

Lincecum, G. On the Cutting-Ant of Texas, *Œcodoma texana*, Buckley. Proc. Acad. Nat. Sci. Philad. 1867, pp. 24–31.

——. The Tarantula-killers of Texas. American Naturalist, vol. i. pp. 137–141.

A notice of *Pompilus formosus* (Say).

Lowe, John. Observations on Dzierzon's Theory of Reproduction in the Honey Bee. Trans. Ent. Soc. Lond. 3rd ser. vol. v. pp. 547–560: 1867.

Lucas, H. Quelques remarques sur le *Philanthus apivorus*, Hyménoptère fouisseur de la tribu des Crabroniens et de la famille des Cercérites. Ann. Soc. Ent. Fr. 4e sér. tome vii. pp. 289–296: October 15, 1867.

——. Quelques remarques sur les nids des *Polybia scutellaris* and *liliacea*, Hyménoptères sociaux de la tribu des Vespides. Ibid. pp. 365–370, pl. 9: December 11, 1867.

M'Lachlan, R. Additions to the British *Tenthredinidæ*. Ent. Monthly Mag. vol. iv. pp. 102–105: October 1867.

Marshall, T. A. Description of a new genus and species of British Hymenoptera, allied to *Pezomachus*. Ent. Monthly Mag. iii. pp. 193–194: February 1867.

——. Descriptions of British Hymenoptera (*Proctotrupidæ*) new to science &c. Ibid. pp. 223–226: March 1867.

Marshall, T. A. On some British *Cynipidæ*. Ent. Monthly Mag. vol. iv. pp. 6–8, 101–102, 124–126, and 146–148.

Morawitz, F. Ueber einige Andrenidæ aus der Umgegend von St. Petersburg. Horæ Soc. Entom. Rossicæ, tom. iii. pp. 61–79: 1865.

Contains a list of the Andrenidæ hitherto detected in the neighbourhood of St. Petersburg, with indications of the localities in which they have been captured, and descriptions of the peculiarly northern ones. Two new species are described. The species not found in Finland and Lapland are marked with an asterisk.

——. Bemerkungen über einige vom Prof. Eversmann beschriebene Andrenidæ, nebst Zusätzen. Horæ Soc. Entom. Rossicæ, tom. iv. pp. 1–28: 1866.

——. Uebersicht der im Gouvernement von Saratow und um St. Petersburg vorkommenden *Odynerus*-Arten. Horæ Soc. Entom. Rossicæ, tom. iv. pp. 109–144: 1867.

——. Ein Beitrag zur Hymenopteren-Fauna des Ober-Engadins. Ibid. tom. v. pp. 39–71: 1867.

Contains a general notice of the Aculeate Hymenoptera of the Upper Engadine, with a list of the Bees occurring in the vicinity of St. Moritz, and descriptions of some new species.

Norton, Edward. Catalogue of the described *Tenthredinidæ* and *Uroceridæ* of North America. Trans. Amer. Entom. Soc. i. pp. 31–84 and 193–324: 1867.

This is the first part of a descriptive and synonymic catalogue of the Securiferous Hymenoptera of North America, and includes the species of the subfamilies *Cimbicides* and *Hylotomides* and a considerable portion of the *Tenthredinides*. The West-Indian species are included.

Packard, A. S. Revision of the Fossorial Hymenoptera of North America. I. Crabronidæ and Nyssonidæ. Proc. Ent. Soc. Philad. vol. vi. pp. 353–445: 1867.

The conclusion of the paper cited in last year's 'Record' (p. 414).

—— The Home of the Bees. American Naturalist, vol. i. pp. 364–378, pl. 10.

A semipopular general account of the habits of Bees.

Perkins, G. A. The Cockroach and its Enemy. American Naturalist, vol. i. pp. 293–296.

A notice of the habits of *Ampulex sibirica* (Fab.).

Radoszkowsky, O. Description d'un genre nouveau, *Pseudomelecta*, et de quelques espèces du genre *Eumenes*. Horæ Soc. Entom. Rossicæ, tom. iii. pp. 53–60, pl. 1: 1865.

Radoszkowsky, O. Enumération des espèces de Chrysides de Russie. Ibid. pp. 295–310, pls. 2–6: 1866.

Reinhard, H. Beiträge zur Kenntniss einiger Braconiden-Gattungen. Viertes Stück (see 'Record,' 1865, p. 532). Berliner entom. Zeitschrift, 1867, pp. 351–374.

Rondani, Camillo. De speciebus duabus Dipterorum generis Asphondyliæ, et de duobus earum parasitis. Annuario Soc. Nat. in Modena, tom. ii. pp. 37–40: 1867.

Saussure, H. de. Mutillarum novarum species aliquot. Ann. Soc. Ent. Fr. 4e sér. tome vii. pp. 351–364, pl. 8: 1867.

Schenck, —. Zusätze zu dem Verzeichnisse der Nassauischen Hymenoptera aculeata. Berl. entom. Zeitschr. 1867, p. 156.

Smith, F. Descriptions of new species of *Cryptoceridæ*. Trans. Ent. Soc. Lond. 3rd ser. vol. v. pp. 523–528, pl. 26: 1867.

——. Observations on the study of Gall-flies (*Cynipidæ*). Entom. Monthly Mag. vol. iii. pp. 181–183.

——. A Revision of the British Species of the genus *Bombus*. Entomologist, vol. iii. pp. 240–243, 255–260, 267–269, 281–288, 293–298.

These papers contain a revision of the synonymy of the British species of *Bombus* and *Apathus*. The last also includes a notice of the species of *Colletes*, being really the commencement of the following article.

——. A Revision of the Characters and Synonymes of British Bees. Entomologist, vol. iii. pp. 305–310, 320–325, and 336–338.

This is a continuation of the articles on the British species of *Bombus* by the same author.

——. Notes on aculeate Hymenoptera observed in 1866. Entomologist, vol. iii. pp. 193–199.

——. Notes on Hymenoptera. Entomologists' Annual, 1868, pp. 81–96.

Taschenberg, E. L. Die drei ersten Sectionen der Gattung *Ichneumon*, Gr. (unter Durchsicht der Typen aus Gravenhorst's Sammlung). Zeitschrift für die gesammten Naturwiss. Band xxvii. pp. 228–318: 1866.

In this paper Taschenberg passes in review the species of Gravenhorst's first three sections of his genus *Ichneumon*. He indicates the equivalents of the species in the writings of modern authors, and accompanies these notices with additional characters, completing Gravenhorst's descriptions. At the end of his paper Taschenberg gives a list of the species, with their synonyms, arranged under Wesmael's genera. His results are

obtained from the examination of the types of Gravenhorst's collection.

Vollenhoven, S. C. Snellen van. De Inlandsche Bladwespen in hare Gedaantewisseling en Levenswijze beschreven. Twaalfde Stuk. Tijdschrift voor Entom. 2de serie, Deel i. pp. 189–208, pls. 7–9: 1866.

A continuation of Vollenhoven's descriptions of Dutch Tenthredinidæ, and of their natural history.

Walker, Francis. Characters of a new genus and species of Chalcidites. Trans. Ent. Soc. Lond. 3rd ser. vol. ii. pp. 441–442: 1866.

Wullschlegel, J. Ueber Vorkommen und Lebensweise der Halmwespe, *Cephus pygmæus*. Mittheil. schweiz. entom. Gesellsch. Band ii. pp. 153–158, with a note by Stierlin.

C. *Anatomical and Physiological papers.*

Kleine, G. Ueber das Gesetz der Entwicklung der Geschlechter bei den Insecten. Zeitschrift für wiss. Zoologie, Band xxii. pp. 533–538. Reprinted from the Bienenzeitung, No. 11, 1867.

This paper is in opposition to the views of Landois, and maintains the parthenogenetic production of Drone-bees, and consequently the determination of the sex of the larvæ of insects whilst still in the egg.

Landois, H. Note sur la loi du développement sexuel des Insectes. Comptes Rendus, tome lxiv. pp. 222–224. Translated in Ann. & Mag. N. H. 3rd ser. vol. xix. p. 224.

Relates to the development of the sexes in Bees.

——. Ueber das Gesetz der Entwicklung der Geschlechter bei den Insecten. Zeitschrift für wiss. Zoologie, Band xvii. pp. 375–379.

An account of Landois's observations on the development of the Honey-Bee, previously published in the Comptes Rendus. Landois maintains that the sex is not determined in the ovum, but during development, by difference in the quality or quantity of the food.

Siebold, C. T. von. Zusatz zu Landois' vorläufiger Mittheilung. Zeitschrift für wiss. Zoologie, Band xvii. pp. 525–532. Translated in Ann. & Mag. N. H. 4th ser. vol. ii. pp. 205–212.

In this paper Siebold discusses the theory of the production of sex in insects proposed by Landois, and maintains, chiefly from general considerations, that the sex is inherent in the egg when deposited by the female insect, and not dependent on the food of the larva.

Gerstäcker, in the introduction to his memoir on the genus *Oxybelus* (Zeitschr. für die ges. Naturw. xxx. pp. 1, 2), remarks upon the general classification of the Hymenoptera, and indicates their division into two main groups, *Hymenoptera apocrita* or *genuina* and *Hym. symphyta* or *phytophaga*. These sections, which the Recorder has always regarded as the natural main divisions of the order Hymenoptera, are characterized, according to Gerstäcker, by the transfer to the thorax in the former of the first abdominal segment, and its retention in the abdomen in the latter, so that in the *Hym. apocrita* we can never distinguish more than 8 dorsal half segments, whilst 9 are recognizable in the *Hym. symphyta*. The characters of the larvæ, which thoroughly bear out this mode of division, are too well known to need mention.

Landois (Zeitschr. für wiss. Zool. xvii. pp. 163–167) notices the sounds emitted by many Insects of this order, and the apparatus by which they are produced. In the Hive-Bee (*Apis mellifica*) a sound is produced by the vibration of the wings during flight; but the true voice of the Insect is produced by the band-like margins of the stigmata, both thoracic and abdominal. These form elongated apertures. This structure occurs also in the other Bees, Wasps, &c. In the *Bombi* the metathoracic stigmata are also sound-organs, having the same structure as in the Hive-Bee. The abdominal stigmata are here the chief producers of sound (pl. 11. fig. 19), and they present a rather complicated construction. Each stigma is an oval aperture surrounded by a chitinous ring; it is situated beneath a hemispherical cup divided by a slit into two nearly equal parts, and is furnished with a double chitinous membrane stretched between the stigma and the lower half of the cup. It is by the vibration of these parts that the well-known sound of the *Bombi* is produced.

Morawitz (Horæ Soc. Ent. Ross. v. pp. 39–45) gives a general account of the Aculeate Hymenoptera of the neighbourhood of St. Moritz in the Upper Engadine, followed by a list of the Bees of the district, which constitute the most numerous and interesting group there. The Vespidæ, especially the social forms, are very numerous in individuals; but the Fossores are not strongly represented either in individuals or species. Of Heterogyna the author notices only *Mutilla europæa* and 2 species of *Sapyga*, one of them *S. pedestris* (Gerst.). Of Anthophila 56 species were detected, 37 of which are distributed nearly all over Europe.

Jaennicke has published (Berl. ent. Zeitschr. 1867, pp. 141–155) a list of the Hymenoptera collected by him during the last three years in the neighbourhood of Frankfort on the Main. He enumerates 496 species, and describes three new Ichneumonidæ.

Frauenfeld (Verh. zool.-bot. Ges. in Wien, xvii. pp. 429–430 and 440–442) gives a list of species of this Order taken by him on board the 'Novara' during her voyage. It includes only 9 species, 6 of which are Ants. The only permanent ship-inhabiting species is *Evania appendigaster*.

Schenck (Berl. ent. Zeits. 1867, p. 156) adds a few notes to his Catalogue of the Aculeate Hymenoptera of Nassau.

Smith (Ent. Annual, pp. 81–86) remarks on the comparative rarity of Hymenoptera during the last two years, and suggests that in many cases, besides the influence of the weather and the destruction caused by various enemies, the disappearance of species from old-established haunts may be accounted for by migration. He cites several instances in support of this view. A species of the Acarina (*Heteropus ventricosa*, Newport) is very destructive in the nests of some species; Smith indicates its habits and states that the ova retain their vitality for years and become developed as soon as they come in contact with the larvæ of Hymenoptera (*l. c.* pp. 84–86). Smith suggests the name of *Newportia* for the genus containing this Acarine parasite, as *Heteropus* had been previously employed by seven different authors. Smith notices the capture of various rare species, and remarks upon some other points, which will be referred to hereafter.

Smith publishes notes on various species of Aculeate Hymenoptera from his observations made in 1866. Entomologist, iii. pp. 193–199.

Anthophila.

Sichel (Reise der Novara, Zool. ii. Hym. pp. 143–156) publishes a list of the Bees collected on the voyage of the 'Novara,' and describes numerous new species. *Lamprocolletes* (*Andrena*) *chalybeatus* (Erichs.) ♂ is described, p. 144, as also ♀ *Ceratina maculata* (Smith), p. 152. *Apis fasciata* (Latr.) occurs in Chili, together with examples of *A. mellifica* showing a tendency towards *A. fasciata*.

Morawitz publishes (Horæ Soc. Ent. Ross. v. pp. 45–71) a list of the species of this group captured by him in the Upper Engadine, 56 in number. He describes in detail the following known species:—*Dufourea alpina* (Moraw.), *Panurginus montanus* (Giraud), *Prosopis angustata* (Schenck), *P. annulata* (Linn.) = *dilatata* and *borealis* (Nyl.) = *patellata* (Eversm.), and *P. rinki* (Gorski) = *distans* (Eversm.) = *annularis* (Schenck). He also gives notes upon the characters and synonymy of *Andrena shawella* (K.) = *nana* (Nyl.) = *nylanderi* (Moraw.), *Halictus fulvicornis* (K.) = *albipes* (Schenck), *H. morio* (Fab.), *Anthidium punctatum* (Lat.) = *minus* (Nyl.), *A. strigatum* (Panz.) = *minusculum* (Nyl.), *Megachile analis* (Nyl.), *Osmia nigricentris* (Zett.), *O. tuberculata* (Nyl.), *O. angustula* (Zett.), *O. rhinoceros* (Giraud), *Heriades nigricornis* (Nyl.) = *Chelostoma inerme* (Eversm.) = probably *H. rapunculi* (St. F.), *Nomada robertjeotiana* (Panz.), var., *Cœlioxys conica* (Linn.), *C. simplex* (Nyl.), *C. mandibularis* (Nyl.), *Stelis signata* (Lat.), and *S. pusilla* (Spin.) = *Heriades breviuscula* (Nyl.) = *Stelis pygmæa* (Sch.).

Morawitz publishes (Horæ Soc. Ent. Ross. iv. pp. 1–28) an important contribution to the knowledge of the Russian Andre-

nides, in the shape of a revision of the species catalogued and described by Eversmann in 1852 as occurring between the Volga and the Ural. Eversmann's new species are described in detail from the types, and the synonymy of some of these, and of species erroneously determined by Eversmann, is indicated. The following may serve as an analysis of the general results:—

Andrena fuscosa (Eversm.) probably=*holomelana* (St. F.), *A. ovina*=*pratensis* (Nyl.)=*leucothorax* (H.-Sch.); *A. gwynana*=*bicolor* (Fab.); [*A. compta* (Eversm.) collides with *A. compta* (St. F.);] *A. cunicularia* belongs to *Colletes*; *A. fulvitarsis* ♀ + *ambigua* ♂=*atriceps* (Kirby), of which *tibialis* (Kirby) is the ♀; *A. limbata* is a good species; *A. aberrans* also; *A. hirticeps*=♂ *afzeliella* (K.); *A. longula*=var. *fulvago* (Chr.); *A. armata*=*helvola* (Linn.); *A. xanthothorax*=*Colletes succincta* (Linn.); *A. brevitarsis* is the ♀ of a *Nomia*; *A. coitana* (Eversm.) differs from *coitana* (K.); *A. fallax* (Ev.)=*chrysosceles* (Schenck), which is distinct from *chrysosceles* (K.), and *A. fallax* (Sch.) is distinct from *fallax* (Ev.); *A. pilosa*=♂ *gwynana* (K.); *A. campestris*=*Halictus sex-notatus* (K.); *A. microstigma* belongs to *Cilissa*; *A. senilis* is a *Colletes*; *A. floricola*=*punctulata* (Sch.); *A. labrosa* belongs to *Systropha*; *A. interrupta*=*afzeliella* (K.); *A. candens*=var. *convexiuscula* (K.); *A. incisa* is a distinct species; *A. tricincta* and *quadricincta* belong to *Cilissa*; *A. smithella*=var. *helvola* (Linn.); *A. afzeliella* is a *Cilissa*; *A. scita* is a distinct species; *A. strangulata*=var. *zonalis* (K.); *A. rosæ*=*schrankella* (Nyl., Sch. nec Kirby) for which Morawitz proposes the name of *A. schencki* (*l. c.* p. 18); *Hylæus quadricinctus*=*quadristrigatus* (Lat.); *H. arbustorum*=*sexcinctus* (Fab.)=*quadricinctus* (Oliv.), of which *scabiosæ* (Rossi)=*zebrus* (Walck.) is a variety; *H. tomentosus*=*quadricinctus* (Fab.); *H. rubellus*=var. ♀ *cylindricus* (Fab.)=*elegans* (St. F.)=probably *rufiventris* (Gir.); *H. abdominalis*+*albipes*=*cylindricus* (Fab.); *H. mucoreus* is a distinct species; *Colletes hylæiformis* probably=*nasuta* (Sm.); *C. floralis* is distinct, as also *Panurginus labiatus*; *Rophites bispinosa*=*Halictoides denticentris* (Nyl.). Morawitz notices the following additional known species from the government of Saratov:—*Andrena nitida* (K.), *Halictus zonulus* (Sm.), *H. parvulus* (Fab.)=*A. pulchella* (Jur.), *Camptopœum frontale* (Fab.)=*Panurgus nasutus* (Spin.)=*P. fasciatus* (Giraud) and *Nomia diversipes* (St. F.).

Morawitz (Horæ Soc. Ent. Ross. ii. pp. 61–79) gives a list of 24 species of *Andrenides* found in the vicinity of St. Petersburg, 2 of which are described as new. Of the others he gives descriptions of the following:—*Andrena ruficrus* (Nyl.); *A. fucata* (Sm.); *A. lapponica* (Zett.)=*varians* (Nyl.); *A. nigriceps* (Kirby)=*fulva* (Nyl.); *A. simillima* (Sm.); *A. argentata* (Sm.); *A. tarsata* (Nyl.); *Halictus sexnotatulus* (Nyl.), *H. rufitarsis* (Zett.); and *H. nitidiusculus* (Kirby).

Bombus. Smith has published (Entomologist, vol. iii.) a series of articles on the British species of this genus. In the first and second he gives a general account of the habits of these insects, their enemies, &c. (*l. c.* pp. 240–243 & 255–258), together with a list of the British species of *Bombus* and *Apathus*, and an exposition of the species described by Kirby, with their modern equivalents, according to Smith's views (*l. c.* pp. 258–260). The remaining articles contain a statement of the synonymy of the species, with remarks chiefly on their occurrence and natural history. 1. *B. muscorum* in-

cludes *senilis* (Fab.); 2. *B. senilis* (Smith nec Fab.)=*cognatus* (Steph.); 3. *B. smithianus* (White) is distinct from *arcticus* (Dahlb.); 10. *B. cullumanus* (Kirby) is regarded as a distinct species and *A. donovanella* (Kirby) as probably its ♀; 13. *B. soroensis* (Fab.) includes *B. collinus* (Smith); 16. *B. lucorum* (Linn.) includes *B. sporadicus* (Nyl.) and *B. cricetorum* (Curt.).

Smith (Entomologist, iii.) has published a revision of the British species of the genera *Colletes* (*l. c.* pp. 296–298), *Prosopis* (*l. c.* pp. 305–310), and *Sphecodes* (*l. c.* pp. 320–325 & 336–338). He notices the general habits of the Insects, and gives the synonymy of the species, with remarks on their distribution &c. The following synonymic indications may be cited from it:—*Prosopis dilatata* and *annularis* are identical; *P. armillata* (Nyl.) probably=*P. punctulatissima* (Smith); *Melitta annulata* (Kirby)=*P. communis*. *P. varipes* (Smith) is entirely unnoticed; is it to be suppressed? and if so to what species does it belong? *P. bifasciata* (Jur.) is described as British on the authority of a specimen taken by Leach. Under the genus *Sphecodes* (*l. c.* pp. 321–325) Smith discusses Sichel's results as to the species of this genus, in which he does not concur. Smith here, as in his catalogue of British Bees, accepts 5 species, the differential characters of which he indicates. These species are:—1. *S. gibbus*; 2. *S. rufiventris*=*Tiphia rufiventris* (Panz.)=*Dichroa analis* (Ill.)=*S. rufescens* (Smith olim); 3. *S. subquadratus*; 4. *S. ephippius*=*S. maculatus* (St. F.); and 5. *S. fuscipennis*.

Packard publishes (Amer. Nat. i. pp. 364–378) a general account of the habits of Bees, illustrated chiefly from North American species. He notices the tropical *Trigoniæ* and *Meliponæ*, the *Bombi*, of which more than 40 North American species are known, *Xylocopa virginica*, *Ceratina dupla*, *Megachile centuncularis*, and species of *Osmia*, and describes their parasites &c. The accompanying plate (pl. 10) contains figures of cells of the Humble-Bee (figs. 1 & 2), of *X. virginica* with its larva and nest (figs. 3–5), of the larva and pupa of *Anthrax sinuosa* (figs. 6 & 7), of a *Megachile* and its cells (figs. 8 & 9), of the larva and cells of *Ceratina dupla* (figs. 10 & 11), of the cells of *Osmia lignivora* (fig. 12), *O. simillima* (figs. 13 & 14), and of a mass of "bee-bread" formed by *O. lignaria* (fig. 15).

Smith remarks that in his opinion all Bees pass the winter either in the perfect or in the larval states. In proof of the power of the larva to resist cold, he states that he has frozen larvæ of *Anthophora* so that they could be snapped in two, yet they retained their vitality. (Entomologist, iii. p. 196.)

Megachile argentata. On the habits of this species, see Smith, Entomologist, iii. p. 195. Smith also notes that he observed *M. centuncularis* cutting the scarlet petals of Geraniums to line its nest (*l. c.* p. 196).

F. Smith notices some nests of *Megachile willughbiella* and other species of *Megachile*. Proc. Ent. Soc. 1867, p. cvi.

Ceratina cærulea. Smith remarks on the habits of this species. Entomologist, iii. p. 197.

Packard (Amer. Nat. i. p. 162) notices the habits of some species of Bees, especially *Xylocopa* and *Ceratina*, from the observations of James Angus.

Smith (Ent. Annual, 1868, pp. 89–90) notices the occurrence of stylopized specimens of *Halictus abdominalis* and *H. obovatus*, and remarks upon the general phenomenon of stylopization. The same author also notices (*l. c.* pp. 90–92) some peculiarities in the habits of the *Bombi*.

Goureau (Insectes nuisibles, pp. 102–111) notices the *Bombi* (*B. mus-*

corum, *hortorum*, *terrestris*, and *lapidarius*) as also the Hive-Bee (*Apis mellifica*) as noxious to man on account of their stings. He describes the appearance and habits of the above-mentioned species.

J. Lowe (Ent. Trans. 3rd ser. v. pp. 547–560) publishes some observations, on the theory of the reproduction of the Honey-Bee, propounded by Dzierzon and supported by Siebold. He states that queens of the Ligurian and Egyptian races (*Apis ligustica* and *fasciata*) when fertilized by drones of the common English type (*A. mellifica*) produced drones which betrayed their mixed parentage in their characters, as ought not to have been the case if the drone-eggs are deposited without fecundation, as supposed by Dzierzon.

H. Landois (Zeits. f. wiss. Zool. xvii. pp. 375–379, and Comptes Rendus, lxiv. pp. 222–224) records some experiments on the transfer of eggs from worker- to drone-cells and *vice versâ*. The insects produced were workers or drones according to the cells in which they were reared, whence the author concludes that the difference of sex in Bees depends solely on their nourishment.

Taschenberg (Zeitschr. ges. Naturw. xxix. p. 87) states that the life of a worker Bee during the busiest season is only about six weeks.

New genera :—

Rhopalictus, g. n., Sichel, Reise der Novara, Hym. p. 146. Allied to *Halictus*; ♂ abdomen clavate. Sp. *Corynura flavofasciata* (Spin.).

Pseudomelecta, g. n., Radoszkowsky, Horæ Soc. Ent. Ross. iii. p. 55, pl. 1. fig. 1 (details). Allied to *Melecta*; marginal cell oval, rounded and separated from the margin at its apex; scutellum somewhat raised, with two tubercles at its anterior margin, terminated at its inferior margin by two teeth. Sp. *M. diacantha* (Eversm.), *l. c.* pl. 1. fig. 2; *P. baerii*, sp. n., Radoszk. *l. c.* p. 56, pl. 1. fig. 3, Orenbourg.

New species :—

Megachile. Sichel (*l. c.*) describes the following new species of this genus: —*M. metathoracica*, p. 148, Batavia; *M. heteroptera*, p. 149, Timor, Nicobar; *M. dubia*, p. 150, Chili; *M. semirufa*, ibid., Chili; *M. ephippiata*, p. 151, Sambelong.

Lithurgus albo-fimbriatus, Sichel, *l. c.* p. 151, Tahiti.

Anthophora maderæ, Sichel, *l. c.* p. 152, Madeira; *A. flavipes*, Sich. *l. c.* p. 153, Chili.

Xylocopa albo-fasciata, Sichel, *l. c.* p. 154, Ceylon.

Osmia loti, Morawitz, Horæ Soc. Ent. Ross. v. p. 66, Engadine.

Andrena ornata, Morawitz, Horæ Soc. Ent. Ross. iv. p. 5, *A. figurata*, Moraw. *l. c.* p. 10, *A. scabrosa*, Moraw. *l. c.* p. 12, and *A. punctatissima*, Moraw. *l. c.* p. 14, from Saratov; *A. mutabilis*, Moraw. *l. c.* p. 18 (= *ruficentris* and *analis*, Eversm.), Eastern Europe and Bokhara.

Halictus mandibularis, Morawitz, *l. c.* p. 23, Saratov.

Halictus? *humeralis*, Sichel, *l. c.* p. 145, *H. apicatus*, Sich. ibid., *H.* (*Augochlora*, Sm.) *chrysurus*, Sich. *l. c.* p. 146, Chili.

Halictus pallipes, Morawitz, Horæ Soc. Ent. Ross. iii. p. 72, and *H. gracilis*, Moraw. *l. c.* p. 77, St. Petersburg.

Halictoides paradoxus, Morawitz, Horæ Soc. Ent. Ross. v. p. 46, Engadine.

Prosopis alpina, Morawitz, *l. c.* p. 50, *P. niralis*, Moraw. *l. c.* p. 52, and *P. gracilicornis*, Moraw. *l. c.* p. 56, Engadine.

Prosopis vicina, Sichel, *l. c.* p. 143, New Zealand, Tasmania; *P.? decolor*, Sichel, ibid., Chili.

Dufourea alpina, Morawitz, *l. c.* p. 78, note, Switzerland.

Vespidæ.

Morawitz has published (Horæ Soc. Ent. Ross. iv. pp. 109–144) an elaborate revision of the species of *Odynerus* occurring in the Government of Saratov and round St. Petersburg. The number of species recorded from Saratov is 29, several of which are described as new; those inhabiting the St. Petersburg district are 13 in number.

Eumenes. Radoszkowsky (Horæ Soc. Ent. Ross. iii. pp. 57–60) gives a list of the Russian species of this genus, with synonyms, and describes and figures *E. tabida* (Eversm.), *l. c.* p. 58, pl. 1. fig. 4, and *E. fulva* (Eversm.), *l. c.* p. 59, pl. 1. fig. 5.

Polybia (*Myrapetra*) *scutellaris* (White). H. Lucas (Ann. Soc. Ent. Fr. 4e sér. vii. pp. 365–368) describes the nest of this species, of which he mentions two specimens, one measuring 54 centims. in length and 1·35 metre in circumference, the other 72 centims. in length and 1·20 metre in circumference. With regard to the mode of construction of the nest he agrees with Saussure. The species is called *Camuati* in Montevideo; it collects a blackish honey, which is eaten and said to be good. The nest is said by the native to be constructed of the dung of the Tapir.

Polybia (*Polistes*) *liliacea* (Fab.). H. Lucas also describes and figures the nest of this species (*l. c.* pp. 369, 370, pl. 9), which is abundant at Cayenne. The specimen described is 1·20 metre in length and 1·16 metre in circumference; it is of an oblong compressed form, suspended from a branch, and contains 27 horizontal combs.

Saussure (Reise der Novara, Zool. Hym.) figures *Polybia surinamensis* (Sauss.) with its nest, pl. 1. fig. 16.

Erber notices the habits of *Vespa alsatica*, especially with regard to the construction of its nest. Sitzungsber. zool.-bot. Ges. in Wien, 1867, p. 107.

F. Smith notices some singular positions selected by *Odynerus quadratus* for the reception of its nest; and Westwood remarks on the same subject in connexion with an unknown species of Bee. Proc. Ent. Soc. 1867, p. xc.

F. Smith notices the occurrence of a doubtful species of *Polistes* at Penzance. (Proc. Ent. Soc. 1867, p. cviii). Bates also remarks upon this insect and the habits of *Polistes* (ibid.). Smith considers the insect to be a variety either of *P. biguttatus* or *P. versicolor*. He seems inclined to think it truly indigenous. (Ent. Annual, 1868, pp. 87, 88, and 96.)

Stone remarks on the scarcity of Wasps near Brighthampton in 1865 (Proc. Ent. Soc. 1865, p. 113). Smith adds that these insects were also scarce at Bournemouth, and Baly that they were abundant at Aberdeen (ibid.). According to Stone, earwigs, woodlice, and ants assisted in the destruction of the nests.

On the hybernation of Wasps, remarks by Guérin-Méneville, Laboulbène, and Künckel. Bull. Soc. Ent. Fr. 1866, p. lxi.

Goureau (Insectes nuisibles, pp. 92–102) indicates that all the Aculeate Hymenoptera may be regarded as noxious on account of the effect produced

by their stings, but describes the Wasps especially as superadding to this general bad quality other injurious habits, particularly the destruction of fruit and of Bees. He describes the appearance and habits of *Vespa crabro*, *V. vulgaris*, *V. germanica*, and *Polistes gallica*.

Labus, g. n., Saussure, Zool. Novara, ii. Hym. p. 3. Allied to *Elimus*; pronotum very small, wide and spinous in front; peduncle long, thin, slightly dilated only at the apex; second cubital cell not pedunculate, narrowed towards radial, first recurrent vein coincident with hinder margin of second cubital cell. Sp. *L. spiniger*, sp. n., Sauss. *l. c.* p. 4, pl. 1. fig. 1, Java; *L. humbertianus*, sp. n., Sauss. *l. c.* p. 4, pl. 1. fig. 2 (wing), Ceylon.

New species :—

Zethus (*Calligaster*) *ceylonicus*, Saussure, *l. c.* p. 5, Ceylon.

Eumenes novaræ, Saussure, *l. c.* p. 6, pl. 1. fig. 3, Rio Janeiro; *E. humbertianus*, Sauss. ibid., Ceylon.

Rhynchium tahitense, Saussure, *l. c.* p. 7, pl. 1. fig. 4, Tahiti; *R. erythrinum*, Sauss. ibid., Cape of Good Hope.

Eumenes baerii, Radoszkowsky, *l. c.* p. 59, pl. 1. fig. 6, Bakou (Caspian).

Odynerus. Saussure (*l. c.*) describes the following new species of this genus :—(subg. Odynerus=*Leionotus*, Sauss.) *O. citreo-cinctus*, p. 10, pl. 1. fig. 5, Sidney; *O. fistulosus*, p. 11, Ceylon; *O. decipiens*, ibid. pl. 1. fig. 6, Sydney; *O. javanus*, p. 12, pl. 1. fig. 7, Java; *O. ceylonicus*, ibid., and *O. humbertianus*, p. 13, Ceylon; *O. araucanus*, p. 14, pl. 1. fig. 8, Chili; *O. frauenfeldi*, p. 15, pl. 1. fig. 9, Shanghai; *O. macilentus*, p. 16, pl. 1. fig. 10, Sydney; and *O. ibericus*, p. 17, pl. 1. fig. 11, Gibraltar.

Odynerus. Morawitz (Horæ Soc. Ent. Ross. iv.) describes the following new species of this genus from the Government of Saratov :—(Ancistrocerus, Wesm.) *O. transitorius*, p. 117 : (Leionotus, Sauss.) *O. magnificus*, p. 119; *O. superbus*, p. 121; *O. angustus*, p. 122; *O. opacus*, p. 124; *O. beckeri*, p. 127; *O. proximus*, p. 128; *O. ballioni*, p. 129; *O. difficilis*, p. 132; *O. membranaceus*, p. 135: (Epipona, Kirby) *O. serripes*, p. 137; *O. similimus*, p. 138; *O. bembeciformis*, p. 139; and *O. crabroniformis*, p. 141.

Odynerus limbiferus (*Leionotus*), Morawitz, *l. c.* p. 136, note, Dalmatia; *O. sibiricus* (*Epipona*), Morawitz, *l. c.* p. 144, note, Siberia.

Alastor lateritius, Saussure, *l. c.* p. 17, and *A. cruentatus*, Sauss. *l. c.* p. 18, pl. 1. fig. 12, Australia.

Vespa peruana, Saussure, *l. c.* p. 18, Quito.

Polistes novaræ, Saussure, *l. c.* p. 19, pl. 1. figs. 13, 14, Nicobar Islands and Australia; *P. dubius*, Sauss. *l. c.* p. 20, pl. 1. fig. 15, Manilla.

Polybia plebeja, Saussure, *l. c.* p. 21, Mexico.

Nectarinia möbiana, Saussure, *l. c.* p. 22, Surinam.

Pompilidæ.

Cresson has published (Trans. Amer. Ent. Soc. i. pp. 85–150) a revision of the North-American genera and species of this group, containing a list of known genera and species, with synonymy, data as to geographical distribution, &c., and, in some cases, descriptions; also descriptions of numerous new species :—

Pompilus 5-notatus (Say)=*biguttatus* (Fab.); *P. marginatus* and *petiolatus* (Say) are identical; *P. plebejus* (Dahlb.) and *P. trifasciatus* (Pal. B.)=

americanus (Pal. B.); *P. sordidus* (Smith)=*fuscipennis* (St. F.); *P. juxtus* (Cress.)=var. *coruscus* (Smith); *P. pallidicornis* (Smith)=*unifasciatus* (Say); *P. ignipennis* (Cress.)=*flammipennis* (Smith); *Agenia fulvipes* (Dahlb.)=*P. mellipes* (Say).

Pompilus formosus (Say). Lincecum notices the habits of this species, which destroys the great *Mygale hentzii* (the "Tarantula" of Texas) for the purpose of storing its nests. The insect is figured. (Amer. Nat. i. pp. 137–141.)

New species:—

Ferreola dimidiatipennis, Saussure, Reise der Novara, Zool. ii. Hym. p. 46, Ceylon; *F. zebrata*, Sauss. *l. c.* p. 48, pl. 3. fig. 29, Sydney; *F. tricolor*, Sauss. *l. c.* p. 48 (=? *pedestris*, Smith), Singapore; *F. miranda*, Sauss. *l. c.* p. 49, pl. 3. fig. 30, Ceylon.

Homonotus lucidulus, Saussure, *l. c.* p. 50, pl. 3. fig. 31, Ceylon.

Entypus cephalotes, Saussure, *l. c.* p. 50, pl. 3. fig. 32, La Plata.

Agenia. Saussure (*l. c.*) describes the following new species of this genus:—*A. micromegas*, p. 51, pl. 3. fig. 33, *A. alaris*, p. 52, *A. bipennis*, ibid., Ceylon; *A. fusiformis*, p. 53, pl. 3. fig. 34, Sydney; *A. frauenfeldiana*, p. 53, pl. 3. fig. 35, Java; *A. concolor*, p. 54, Ceylon; *A. novaræ*, ibid. pl. 3. fig. 36, Sydney; *A. insularis*, p. 55, *A. nana*, ibid., *A. obsoleta*, p. 56, pl. 3. fig. 37, and *A. plebeja*, p. 57, Ceylon.

Pogonius lunulatus, Saussure, *l. c.* p. 58, pl. 3. fig. 38, Sydney.

Pompilus ardens, Saussure, *l. c.* p. 59, Cape of Good Hope; *P. ignobilis*, Sauss. *l. c.* p. 60, Ceylon; *P. subsericeus*, Sauss. *l. c.* p. 60, pl. 3. fig. 39, Shanghai; and *P. bilunulatus*, Sauss. *l. c.* p. 61, Rio Janeiro.

Pompilus. Cresson (Trans. Amer. Ent. Soc. i.) describes the following North-American and West-Indian species of this genus:—(subg. POMPILUS) *P. maurus*, p. 88; *P. ingenuus*, p. 89; *P. hyacinthinus*, p. 90; *P. brevicornis*, ibid.; *P. subviolaceus*, p. 91; *P. humilis*, ibid.; *P. cylindricus*, p. 92, fig. 4 (wing); *P. virginiensis*, ibid.; *P. argenteus*, p. 93; *P. unicus*, p. 95; *P. semirufus*, p. 100; *P. divisus*, ibid.; *P. cinctipes*, p. 102 (= *Ceropales apicalis*, Say nec Vanderl.); *P. navus*, p. 105; *P.*? *mariæ*, p. 108, fig. 6; *P.*? *legatus*, p. 109; (subg. PRIOCNEMIS) *P. (P.) magnus*, p. 111; *P. (P.) fulvicornis*, p. 112; *P. (P.) fortis*, p. 113; *P. (P.) subopacus*, p. 114; *P. (P.) fulgifrons*, ibid.; *P. (P.) pomilius*, p. 116; *P. (P.) germanus*, ibid.; *P. (P.) validus*, ibid.; *P. (P.) scitulus*, p. 118; *P. (P.) nothus*, ibid.; *P. (P.) asperus*, ibid.; *P. (P.) parcus*, p. 119 (=*terminatus*, Cress. nec Say); *P. (P.) sartorianus*, p. 120; *P. (P.) cinctipennis*, ibid.; (subg. AGENIA) *P. (A.) cupidus*, p. 122; *P. (A.) pulchripennis*, p. 123; *P. (A.) brevis*, ibid., fig. 9 (wing); *P. (A.) dakota*, p. 124; *P. (A.) nigropilosus*, ibid.; *P. (A.) albopilosus*, p. 125; *P. (A.) bombycinus*, ibid.; *P. (A.) varipes*, p. 126; *P. (A.) pulchrinus*, ibid.; *P. (A.) agilis*, ibid.; *P. (A.) petiolatus*, p. 127; *P. (A.) iridipennis*, ibid.; *P. (A.) calcaratus*, p. 128; *P. (A.) congruus*, p. 129, fig. 10 (wing); *P. (A.) longulus*, ibid.; *P. (A.) acceptus*, p. 130, fig. 11 (wing); *P. (A.) mexicanus*, ibid.; *P. (A.) subvirescens*, p. 131; *P. (A.) azureus*, ibid.

Planiceps niger, Cresson, *l. c.* p. 136, Connecticut, Georgia; *P. cubensis*, Cress. ibid., Cuba.

Priocnemis fulgidipennis, Saussure, *l. c.* p. 61; *P. consanguineus*, Sauss. *l. c.* p. 62, pl. 3. fig. 40, and *P. humbertianus*, Sauss. *l. c.* p. 63, pl. 3. fig. 41, Ceylon; *P. tinctor*, Sauss. *l. c.* p. 63, Cape of Good Hope.

Myginnia ceylonica, Saussure, *l. c.* p. 64, Ceylon; *M. aviculus*, Sauss. ibid., pl. 2. fig. 28, Java.

Myginnia mexicana, Cresson, *l. c.* p. 143, Mexico; *M. panamensis*, Cress. *l. c.* p. 150, Panama.

Pepsis dubitata, Cresson, *l. c.* p. 144, Georgia.

Pepsis australis, Saussure, *l. c.* p. 65, pl. 3. fig. 42, Australia.

Ceropales nigripes, Cresson, *l. c.* p. 139, Dakota; *C. robinsonii*, Cress. *l. c.* p. 140, fig. 15, Virginia.

Trigonalys pulchellus, Cresson, Proc. Ent. Soc. Phil. vi. p. 351, Virginia; *T. (Lycogaster) costalis*, Cresson, *l. c.* p. 352, Massachusetts.

Crabronidæ.

Packard (Proc. Ent. Soc. Phil. vi. pp. 353–445) concludes his revision of the North American species of Crabronidæ and Nyssonidæ. This portion includes the Crabronine genera *Thyreopus* with 14 species (tabulated on p. 355), *Blepharipus* with 5 sp. (tabulated on p. 372), and *Rhopalum* with 3 sp.; and of the *Pemphredoninæ*, *Stigmus* with 4 species, *Cemonus*, *Pemphredon*, and *Diodontus* with 1 species each, *Passalœcus* with 2 sp., *Psen* with 6 sp. (tabulated on p. 398), and *Mimesa* with 10 sp. (tabulated on p. 404). His Nyssonidæ include the subfamilies *Trypoxyloninæ*, with the genus *Trypoxylon*, 7 sp. (tabulated p. 413) and 3 unknown to author; *Mellininæ*, with genera *Mellinus*, 2 sp., and *Alyson*, 3 sp.; *Nyssoninæ*, with genera *Gorytes* with 14 sp. (tabulated pp. 423–424) and 6 unknown to author, *Oxybelus* with 8 sp. (tabulated p. 434), *Nysson* with 4 sp., *Stizus* with 3 sp., and *Larra* with 6 species (5 unknown to author). Many of the species are described as new, and will be noticed hereafter.

Nysson. Gerstäcker (Abhandl. naturf. Gesellsch. in Halle, x. pp. 71–126) publishes a revision of the species of this genus, which he preludes with a critical history of the works of former authors who have written on this subject. He discusses the genera *Synneurus* and *Brachystegus* founded by Costa at the expense of the genus *Nysson*, and characterized by peculiarities in the venation of the wings, and the subgenus *Paranysson* separated by Guérin on the ground of the presence of strong spines on the hinder tibiæ, and shows, by the investigation of various species, that the characters adduced by these authors for the establishment of their proposed new groups are insufficient for that purpose, some of them perhaps individual peculiarities. The total number of supposed species described by authors is 32; but these are reduced by the suppression of synonyms to 16, to which Gerstäcker now adds 7, raising the total number of species recognized by him to 23. In characterizing the genus, Gerstäcker calls particular attention (pp. 86, 87) to the presence of two rings in the trochanters of the first and second pairs of legs, this to a certain extent forming an exception to the accepted division of the Hymenoptera into *Ditrocha* and *Monotrocha*. He finds the same structure in other genera of Fossorial Hymenoptera, namely, *Gorytes*, *Hoplisus*, *Bembex*, *Stizus*, *Philanthus*, *Trypoxylon*, *Cemonus*, and *Oxybelus*; in the last the structure is

particularly distinct in the intermediate legs. The second ring is wanting in the Bees, and in various genera of Fossoria, but present in several Vespidæ. The distinction founded on the single or double trochanter holds good as far as the hind legs are concerned.

The species of *Nysson* described by Gerstäcker are treated of by him in geographical groups, commencing with the European species, 11 in number. Asia and Australia furnish each a single species; of the remainder, 8 are American, 1 African, and 1 of unknown origin.

Oxybelus. Gerstäcker (Zeitschr. ges. Naturw. xxx.) discusses the early history of this genus, which he characterizes at enormous length, the description of its generic peculiarities occupying no fewer than 29 pages. It is to be remarked, however, that this description includes many remarks comparing the structure of the different parts in this and other forms of Aculeate Hymenoptera. With reference to the inequality of the facets in the eyes of *Oxybelus* (the central facets are larger than those of the periphery) Gerstäcker takes occasion to notice the occurrence of a similar character in insects of other orders (*l. c.* pp. 10–15). Gerstäcker discusses the alliances of *Oxybelus* (*l. c.* pp. 40–46), and thinks that it should be placed, at least provisionally, in a group by itself, which would most closely approach the thin-petiolated *Crabronides*, such as *Blepharipus*, *Thyreopus* and *Rhopalum*. Its true place would be between the *Cercerides*, ending with *Palarus* and the *Crabronides*, commencing with *Ceratocolus*. After referring to the difficulty of determining the species of this genus and discussing the characters by means of which they are to be distinguished (*l. c.* pp. 47–52), Gerstäcker proceeds to the description of the species hitherto detected in the neighbourhood of Berlin, of which he recognizes 16, tabulated on pp. 53–55. These are afterwards fully described, with a detailed and dated synonymy; and a few new species from other parts of Europe are described in notes. The species of the neighbourhood of Berlin are as follows:—

O. lineatus (Fab.)=*bellicosus* (Oliv.), pp. 55–59; *O.* 14-*notatus* (Jur.)=*bellus* and *bellicosus* (Dahlb.)=*furcatus* (St. F.) pp. 62–65; *O. mucronatus* (Fab.)=*argentatus* (Curt.)=*ferox* (Shuck.), pp. 67–70; *O. nigripes* (Oliv.)=*trispinosus* (Dahlb. &c. *nec* Fab.), pp. 71–75; *O. bipunctatus* (Oliv.)=*nigro-æneus* (Shuck.)=*hæmorrhoidalis* (Dahlb.)=*laciniatus* (Schill.), pp. 77–80; *O. latro* (Oliv.) ♀+♂ *armiger* (Oliv.), pp. 80–84; *O. uniglumis* (Linn.)=*trispinosa* (Fab.)=*punctata* (Fab.)=*tridens* (Fab.)=10-*maculata* (Don.)=*pygmæus* (Oliv.), pp. 85–89; *O. variegatus* (Wesm.)=? *hæmorrhoidalis* (Oliv.), pp. 94, 95; and 8 new species.

Pelopeus. Saussure (Reise der Novara, Zool. Hym. pp. 28–29) discusses the yellow-spotted American species of this genus, which he reduces to 6 (tabulated p. 29). The species are as follows, with their varieties or "nascent species":—

1. *P. cœmentarius* (Drury); named vars. *flavipes* (Fab.), *architectus* (Le P.), *lunatus* (Fab.), *flavipunctata* (Christ.), and *jamaicensis* (Fab.).
2. *P. servillii* (Le P.).
3. *P. vindex* (Le P.); named vars. *chilensis* (Spin.), *annulatus* (Cress.).
4. *P. histrio* (Le P.); named vars. *fistularis* (Dahlb.), *bimaculatus* (Le P.).
5. *P. fasciatus* (Le P.)=*argentifrons* (Cress.).
6. *P. lucæ*, sp. n.

Lucas records some observations made near Lion-sur-Mer on *Philanthus apivorus* (Ann. Soc. Ent. Fr. 4e sér. vii. pp. 289–296). He found this insect in great abundance burrowing in the sand-dunes, and watched the females engaged in bringing in the Bees (*Apis mellifica*), which they store for the nourishment of their progeny. The burrows are from 30 to 32 centimetres in depth (=nearly 1 foot) and curved in the middle. The Bees, from 5 to 7 in number, are generally arranged one over the other; they are not killed, but stupefied by the sting of the *Philanthus*; and examples taken from the burrows exhibited signs of life for a fortnight. Lucas found in the burrows the remains of the cocoons of the *Philanthus*.

Lucas also remarks (*l. c.* p. 293, note) that *Cerceris variabilis* provisions its larvæ with *Halictus abdominalis* and *ovatus*; *Psammophila arenaria* employs the larvæ of *Xylophasia lithoxylea* for the same purpose; and *Mellinus arvensis* stores up *Scatophaga scybalaria* and *Pollenia rudis* for its progeny.

Philanthus apivorus. Goureau (Insectes nuisibles, pp. 89–92) describes this species and its habits.

Saussure (Reise der Novara, Zool. Hym.) figures *Trypoxylon excavatum* (Smith), pl. 4. fig. 49.

Perkins notices the habits of *Ampulex sibirica* (Fab.) and especially its destruction of Cockroaches. Amer. Nat. i. pp. 293–296.

Ammophila sabulosa. Kawall publishes some notes on the habits of this insect (Stett. ent. Zeit. 1867, pp. 121 122).

The 'American Naturalist' contains a notice of the action of species of *Tachytes* in fecundating plants. The observation was made by T. Chambers, who noticed the adhesion of the pollen of an *Asclepias* to the hairs on the insect's feet. A foot with the adherent pollen is figured. (Amer. Nat. i. pp. 105–107.)

New species :—

Blepharipus harrisii, Packard, *l. c.* p. 376 (=*Crabro pusillus*, Harr.), Massachusetts; *B. minimus*, Pack. *l. c.* p. 377, Maine.

Rhopalum pedicellatum, Packard, *l. c.* p. 380, and *R. rufigaster*, Pack. *l. c.* p. 382, North America.

Stigmus americanus, Packard, *l. c.* p. 386, Illinois.

Diodontus americanus, Packard, *l. c.* p. 393, Maine.

Psen niger, Packard, *l. c.* p. 399, Virginia; *P. elongatus*, Pack. *l. c.* p. 400, Illinois; *P. chalcifrons*, Pack. *l. c.* p. 401, Illinois; and *P. fuscipes*, Pack. *l. c.* p. 402, Massachusetts.

Mimesa cressonii, Packard, *l. c.* p. 405, New Jersey, New York; *M. basirufa*, Pack. *l. c.* p. 406, Maine; *M. denticulata*, Pack. ibid., Illinois, New York; *M. monticola*, Pack. *l. c.* p. 407, New Hampshire; *M. pauper*, Pack. *l. c.* p. 409, Illinois; and *M. cingulata*, Pack. *l. c.* p. 410, Maine.

Trypoxylon rubrocinctum, Packard, *l. c.* p. 416, Delaware, Virginia; and *T. tridentatum*, Pack. *l. c.* p. 417, New York, New Jersey.

Trypoxylon. Of this genus Saussure (*l. c.*) describes the following new species:—*T. palliditarse*, p. 77, Brazil; *T. texense*, ibid., Texas; *T. mexicanum*, p. 78, pl. 4. fig. 45, Mexico; *T. xantianum*, ibid., and *T. californicum*, ibid., California; *T. columbianum*, p. 80, pl. 4. fig. 46, Caraccas; *T. bahiæ*, ibid., Bahia; *T. aztecum*, ibid., Mexico; *T. niveitarse*, p. 81, Brazil; *T. lactitarse*, ibid., Mexico; *T. luteitarse*, p. 82, pl. 4. fig. 47, Mexico; *T. pennsylvanicum*, p. 82, *T. chichimecum*, p. 83, pl. 4. fig. 48, *T. toltecum*, p. 83, Mexico; *T. errans*, p. 84, Mauritius? or Brazil?; *T. brasilianum*, p. 84, Bahia; and *T. brevipenne*, p. 85, pl. 4. fig. 50, Guinea.

Trypoxylon scutatus, Chevrier, Mitth. schw. ent. Ges. ii. p. 231, Geneva.

Nysson. Gerstäcker (*l. c.*) describes the following new species:—*N. militaris*, p. 103, Rhodes and Naxos; *N. tridens*, p. 106, Brandenburg; *N. mysticus*, p. 112, Swan River; *N. opulentus*, p. 114, North America; *N. forciscutis*, p. 116, Brazil; *N. chrysozonus*, p. 117, Montevideo; *N. luteipennis*, p. 120, Brazil.

Gorytes. Packard (*l. c.*) describes the following new North-American species of this genus:—*G. nebulosus*, p. 424; *G. rufo-luteus*, p. 425; *G. ephippiatus*, p. 426; *G. rugosus*, p. 427; *G. canaliculatus*, p. 428; *G. denticulatus*, p. 430; and *G. monedulioides*, p. 431.

Oxybelus. Gerstäcker (*l. c.*) describes the following new species of this genus:—*O. elegantulus*, p. 59, *O. pulchellus*, p. 65, *O. ambiguus*, p. 75, *O. incomptus*, p. 76, *O. monachus*, p. 84, *O. sericatus*, p. 89 (= ♀ *trispinosus*, St. F.), *O. fallax*, p. 91, and *O. latidens*, p. 92, from the neighbourhood of Berlin; *O. spectabilis*, p. 83, note, Andalusia; and *O. analis*, p. 93, note (= ♀ *tridens*, St. F.), Austria.

Oxybelus mucronatus, Packard, *l. c.* p. 436, Pennsylvania, Illinois.

Thyreopus lactarius, Chevrier, Mitth. schw. ent. Ges. ii. p. 229, Lake Leman.

Thyreopus. Packard (*l. c.*) describes the following new North-American species of this genus:—*T. coloradensis*, p. 356 (= *latipes*, Cress. *nec* Smith); *T. cribrellifer*, p. 358; *T. signifer*, p. 361; *T. discifer*, p. 363; *T. tumidus*, p. 364; *T. cingulatus*, p. 366; *T. monticola*, p. 367; and *T. vernalis*, p. 369.

Bembex emarginata, Sichel, Reise der Novara, Zool. Hym. p. 141, Chili.

Pison tahitense, Saussure, *l. c.* p. 65, Tahiti.

Tachytes. The following new species are described by Saussure (*l. c.*):—*T. ibericus*, p. 68, Gibraltar; *T. australis*, ibid., Sydney; *T. novaræ*, p. 69, Nicobar Islands; *T. depressus*, ibid., New Zealand; *T. columbianus*, p. 70, Caraccas; *T. imperialis*, p. 71, Chili; *T. capensis*, ibid., Cape of Good Hope; *T. trigonalis*, p. 72, Java.

Larrada insularis, Saussure, *l. c.* p. 73, pl. 4. fig. 43, Nicobar Islands; *L. nigripes*, Sauss. *l. c.* p. 74, Tasmania; *L. americana*, Sauss. ibid., Venezuela, Brazil.

Harpactus (*Clytemnestra*) *chilensis*, Saussure, *l. c.* p. 76, pl. 4. fig. 44, Chili.

Dasyproctus ceylonicus, Saussure, *l. c.* p. 85, pl. 4. fig. 51, Ceylon.

Trachypus mexicanus, Saussure, *l. c.* p. 86, Tampico; *T. surinamensis*, Sauss. ibid.

Cerceris. Saussure (*l. c.*) describes the following new species of this genus:—*C. simulans*, p. 87, pl. 4. fig. 53, *C. semipetiolata*, p. 88, *C. zapoteca*, p. 89, *C. trepaneca*, p. 90, *C. acolhua*, ibid., *C. tolteca*, p. 94, *C. maximiliani*, ibid., *C.*

subpetiolata, p. 95, *C. azteca*, p. 97, *C. imperialis*, p. 98, pl. 4. fig. 56, *C. otomia*, p. 99, *C. mexicana*, p. 101, pl. 4. fig. 59, and *C. huastecæ*, p. 102, pl. 4. fig. 60, Mexico; *C. texensis*, p. 89, and *C. occidentalis*, p. 100, pl. 4. fig. 57, Texas; *C. pygmea* [sic], p. 91, Shanghai; *C. maritima*, ibid., Mauritius; *C. novaræ*, p. 92, pl. 4. fig. 54, *C. humbertiana*, p. 97, *C. emortualis*, p. 98, pl. 4. fig. 55, Ceylon; *C. natalensis*, p. 96, Natal.

Podium egregium, Saussure, *l. c.* p. 35, Uruguay; *P. romandinum*, Sauss. ibid. pl. 2. fig. 19, Brazil.

Chlorion zonatum, Saussure, *l. c.* p. 36, pl. 2. fig. 20, Guinea.

Sphex. Saussure (*l. c.*) describes the following new species of this genus:—*S. longiventris*, p. 37, pl. 2. fig. 21, Guinea; *S. aztecus*, p. 38, pl. 2. fig. 22, Mexico; *S. brasilianus*, p. 39, Rio Janeiro; *S. hirsutus*, p. 40, Mexico; *S. chichimecus*, ibid., Mexico; *S. trepanecus*, p. 41, pl. 2. fig. 23, Mexico; *S. lucæ*, p. 41, California.

Harpactopus australis, Saussure, *l. c.* p. 42, pl. 2. fig. 24, Australia.

Ampulex sinensis, Saussure, *l. c.* p. 43, pl. 2. fig. 25, and *A. novaræ*, Sauss. *l. c.* p. 44, pl. 2. fig. 26, Hong Kong; *A. surinamensis*, Sauss. ibid., Surinam.

Ampulex fasciata (Jurine), Chevrier, Mitth. schw. ent. Ges. ii. p. 232, near Geneva.

Ammophila superciliaris, Saussure, Reise der Novara, Zool. Hym. p. 24, Manilla; *A. longiventris*, Sauss. ibid., and *A. humbertiana*, Sauss. p. 25, Ceylon; *A. mexicana*, Sauss. ibid., Mexico.

Pelopæus. Saussure (*l. c.*) describes the following new species of this genus:—*P. californicus*, p. 26, California; *P. aztecus*, ibid., Mexico; *P. tahitensis*, p. 27, pl. 2. fig. 17, Tahiti; and *P. lucæ*, p. 30, California.

Trigonopsis intermedius, Saussure, *l. c.* p. 33, pl. 2. fig. 18, Brazil.

Scoliidæ.

Saussure (Reise der Novara, Zool. Hym.) figures *Scolia* (*Discolia*) *sinensis* (Sauss.), pl. 4. fig. 61, and *Elis* (*Dielis*) *cyanea* (Sauss.), pl. 4. fig. 62.

Elis (*Dielis*) *nana*, sp. n., Saussure, *l. c.* p. 105, Brazil.

Mutillidæ.

Thynnides. Saussure (Reise der Novara, Zool. Hym. pp. 108–110) gives a synopsis of the genera belonging to this group, some of which are afterwards fully characterized in treating of the species collected on the 'Novara's' voyage. The synoptical tables are as follows:—

Legion I. ♂. First cubital cell not divided at apex: first transverso-cubital vein entire; mandibles tridentate. ♀ unknown.

1. Both recurrent veins received by 2nd cubital cell.
Tachypterus (Guér.).
2. First recurrent vein received by 2nd cubital cell; second interstitial.
Oncorhinus (Shuck.).
3. Recurrent veins received by 2nd and 3rd cubital cells.
Anthobosca (Guér.).

Legion II. ♂. First cubital cell divided at apex by a branch of the trans-

verso-cubital vein (or appendiculate); recurrent veins received by 2nd and 3rd cubital cells; mandibles bidentate. ♀. Thorax transversely tripartite.

MALES.

I. Hypopygium dentate or aculeate at apex.
  A. First cubital cell separated from anterior discoidal cell.
    1. Hypopygium narrow, briefly dentate or trilobate at apex (clypeus ovate, submarginate, or excised at apex). American.
      ELAPHROPTERA (Guér.).
    2. Hypopygium produced into a distinct spine (clypeus produced and truncate at apex). Australasian.
      * Hypopygium small, concealed, produced into a strong, compressed spine, much curved at apex, commencing beneath 7th dorsal segment ..... RHAGIGASTER (Guér.).
      † Hypopygium large, trigonal, produced beyond 7th segment, produced at apex into a small spine.
        a. Abdomen variable; maxillary palpi with 6 nearly equal joints.
          THYNNUS (Fab.).
        b. Abdomen attenuate at base; maxillary palpi with joints 1–3 minute, 4–6 very long ..... TACHYNOMYIA (Guér.).
  B. First cubital cell confluent with anterior discoidal cell.
    ISWARA (Westw.).

II. Hypopygium unarmed.
  A. Maxillary palpi with 6 nearly equal joints.
    1. Hypopygium rather prominent, narrow, truncate at apex (clypeus ovate, subexcised at apex). American.
      ELAPHROPTERA (Guér.).
    2. Hypopygium broader, subtrigonal or subquadrate, blunt or truncate at apex. Australasian ..... ZELEBORIA, g. n.[1]
  B. Maxillary palpi with joints 1–3 short, 4–6 very long. American.
    ELURUS (Klug).

FEMALES (known at present).

I. Body rather stout; abdomen thick, pygidium narrowed, deflexed, or compressed; metathorax oblique, tranversely compressed, sublamellar; claws furcate.
  A. Segment 2 of abdomen tranversely keeled.
    THYNNUS.
  B. Segment 2 of abdomen transversely wrinkled.
    ELAPHROPTERA.

II. Body slender, elongate, and narrow; abdomen cylindric; thorax flattened above; metanotum longitudinal; anus rounded, normal.
  A. Head quadrate, sulcate on each side behind the eyes; abdomen depressed ..... { RHAGIGASTER. / DIAMMA.
  B. Head not sulcate behind the eyes; abdomen cylindrical; claws simple ..... { ELURUS. / (EIRONE.)

The following genera are founded on the ♀, the ♂ being unknown:—

[1] *Zeleboria* includes, of known species, *Thynnus xanthorhei* (Smith), *carinatus* (Smith), *depressus* (Westw.), *odyneroides* (Westw.), &c.

Eirone (Westw.): form of *Ælurus*; joints of palpi 4:4; mandibles with 2 teeth.

Entheles (Westw.): form of *Thynnus*; joints of palpi 4:6; mandibles with a simple point.

Diamma (Westw.): form nearly of *Rhagigaster*; joints of palpi 4:6; mandibles with 4 teeth on inner margin.

Ariphron (Erichs.): head much broader than thorax, which has a *processus aleeformis* on each side; claws simple; maxillary palpi with 6 normal joints.

Details of the following genera are figured by Saussure (*l. c.* pl. 4):—*Rhagigaster*, figs. 66 and 67; *Thynnus*, figs. 68 and 69; *Elaphroptera*, fig. 71; and *Ælurus*, fig. 73.

Saussure, in describing some new species of *Mutilla* (Ann. Soc. Ent. Fr. 4e sér. vii. pp. 351–364), tabulates the contents of that genus, and indicates the positions of various species described by him in the Entomology of the 'Novara's' voyage.

Lucas notices the characters of *Mutilla gloriosa* (Sauss.). Bull. Soc. Ent. Fr. 1867, p. xcii.

New species:—

Mutilla. Saussure (Ann. Soc. Ent. Fr. 4e sér. vii.) describes 12 new species of this genus, namely:—*M. egregia*, p. 351, pl. 8. fig. 1, *M. humbertiana*, p. 353, pl. 8. fig. 2, *M. soror*, p. 354, pl. 8. fig. 3, *M. intermedia*, p. 354, *M. bicincta*, p. 355, pl. 8. fig. 4, *M. ocellata*, p. 356, pl. 8. fig. 5, and *M. hexaops*, p. 356, pl. 8. fig. 6, from Ceylon; *M. sumichrasti*, p. 357, pl. 8. figs. 7, 8, *M. sichcliana*, p. 360, pl. 8. fig. 10, and *M. holotricha*, p. 361, pl. 8. fig. 11, from Mexico; *M. gloriosa*, p. 359, pl. 8. fig. 9, Lower California; and *M. clarazi-ana*, p. 362, Bahia Blanca.

Mutilla. Saussure (Reise der Novara, Zool. Hym.) describes the following new species:—*M. novaræ*, p. 106, pl. 4. fig. 63, Hong Kong; *M. maculo-fasciata*, p. 107, Ceylon, Timor, and Luzon; and *M. capensis*, p. 107, pl. 4. fig. 64, Cape of Good Hope.

Tachypterus australis, Saussure, *l. c.* p. 109, pl. 2. fig. 27, Sydney.

Rhagigaster novaræ, Saussure, *l. c.* p. 112, New Zealand; *R. bidens*, Sauss. ibid., Sydney; *R. pygionatus*, Sauss. *l. c.* p. 113, Tasmania; *R. aculeatus*, Sauss. ibid., Sydney.

Thynnus. The following new species of this genus are described by Saussure (*l. c.*):—*T.* (*Agriomyia*?) *zelebori*, p. 117, Sydney; *T. bidens*, p. 118, pl. 4. fig. 68 (hypop.), Australia; *T.* (*Thynnoides*) *novaræ*, p. 119, Sydney; *T.* (*Agriomyia*) *tasmaniensis*, p. 119, Tasmania; *T.* (*A.*) *frauenfeldianus*, p. 120, Sydney; *T. cœlebs*, p. 122, Sydney; *T. viduus*, p. 123, pl. 4. fig. 70 (abdomen), Sydney; and *T. 4-carinatus*, p. 124, Sydney.

Tachynomyia cœlebs, Saussure, *l. c.* p. 125, and *T. nitens*, Sauss. ibid. pl. 4. fig. 65, Australia.

Elaphroptera relicta, Saussure, *l. c.* p. 126, Chili; *E. claraziana*, Sauss. *l. c.* p. 127, La Plata; *E. chilensis*, Sauss. *l. c.* p. 128, Chili; and *E. spinolæ*, Sauss. *l. c.* p. 129 (= *T. tricolor*, Spin.), Chili.

Zeleboria (g. n., see table) *fusiformis*, Saussure, *l. c.* p. 132, and *Z. imitatrix*, Sauss. ibid. pl. 4. fig. 72 (maxilla), Australia.

FORMICIDÆ.

HAGENS (Berl. ent. Zeitschr. 1867, pp. 101–108) discusses the relations of the ants forming mixed colonies. He distinguishes here two categories, namely, "Robber-ants" and "Guest-ants." The "Guest-ants" live in their three sexes in the colonies of other species. Under this category, Hagens refers to:—*Stenamma westwoodii* (Westw.), found in nests of *F. rufa* and *congerens*; *Tomognathus sublævis* (Nyl.), ☿ only known, and found in colonies of *Leptothorax acervorum* and *muscorum*; and *Ascmorhoptrum lippulum* (Nyl.) ☿, found usually with *Lasius fuliginosus*, also with *Formica sanguinea* and *Lasius brunneus*. The author met, near Elberfeld, with ☿ and wingless ♀ of this species forming a colony, and also captured the ♂; *Myrmecina latreillii* (Curt.) ☿ found with *F. rufa*, and also in independent colonies. Other species are met with occasionally in large ants' nests. Hagens notices his having found, in a colony of *F. rufa*, ☿ ☿ of *Myrmica lævinodis, scabrinodis, lobicornis, Leptothorax acervorum* and *Tetramorium cæspitum*, and a wingless ♀ of *L. fuliginosus*.

Under the head of "Robber-ants," or those which carry off larvæ and pupæ from strange colonies, and employ the ☿ produced from these as slaves, Hagens notices the habits and natural history of the following species:—*Formica sanguinea* (Lat.), *Polyergus rufescens* (Lat.), *Strongylognathus testaceus* (Schenck), and *Myrmica atratula* (Schenck). The *Strongylognathus* appears rather to take up its abode with *Tetramorium cæspitum*, and, from the author's account of its habits, cannot be regarded as a robber; he seems inclined to think that *Strongylognathus* is a monstrous development of *Tetramorium*. In the case of *Myrmica atratula*, also, the phenomenon is one only of cohabitation.

GOUREAU (Insectes nuisibles, pp. 74–89) describes the following species of ants as troublesome or mischievous, especially when they intrude into houses:—*Formica ligniperda, fuliginosa, cunicularia*, and *nigra*, and *Myrmica cæspitum unifasciata*, and *fugax*. He also notices as destroyers of ants:—*Myrmeleon formicarium, Dysdera erythrina*, and *Microphantus formicivorus*.

SMITH (Ent. Annual, 1868, pp. 93–95) remarks upon the habits of some species of ants, and, especially, gives a list of the species found by Rothney in a single nest of *F. sanguinea*.

BOND calls attention to the description of an immense swarm of ants at Coburg, at the end of August 1865. The swarm produced the appearance of smoke, issuing from the church of St. Maurice, in that city. Proc. Ent. Soc. 1865, p. 114.

FRITSCH (Berl. ent. Zeitschr. 1867, pp. 259–260) notices the habits of the South-African ants, some of which are very troublesome in houses.

NEWMAN notices an ant, said to be found in decayed pine-stumps in Scotland, resembling *F. herculanea*, but thought by Smith to be identical with a North-American species. Proc. Ent. Soc. 1867, pp. lxxvi–lxxvii, also Entomologist, iii. p. 224.

Œcodoma texana (Buckl.). G. Lincecum publishes an account of his observations on the habits of this species, the Cutting-Ant of Texas. Proc. Acad. Nat. Sci. Phil. 1867, pp. 24–31.

BUCKLEY redescribes his species *Œcodoma texana* ("Cutting-Ant") and *Myrmica* (*Monomorium*) *molifaciens*. Proc. Ent. Soc. Phil. vi. pp. 347 & 348.

FALLOU and GIRAUD notice the occurrence in Paris, on the 21st July, 1867,

of an extraordinary abundance of ants. The species, according to Giraud, was *F. aliena* (Först.). Bull. Soc. Ent. Fr. 1867, pp. lvii–lviii.

The Prussian Government has issued a decree against the destruction of Ants and their pupæ in the forests, on the ground of their keeping caterpillars in check. Arch. Cosmol. 1867, p. 190.

New species :—

Formica. S. B. Buckley (Proc. Ent. Soc. Phil. vi.) describes the following as new North-American species of this genus:—*F. nova angle* (sic), p. 153, Maine; *F. nortonii*, ibid., *F. americana*, p. 154, *F. connecticutensis*, ibid., Connecticut; *F. gnava*, p. 156, Texas, New York, Connecticut; *F. occidentalis*, p. 157, *F. monticola*, ibid., and *F. gracilis*, p. 158, Western New York; *F. parva*, p. 159, *F. atra*, ibid., *F. virginiana*, ibid., *F. arenicola*, p. 160, Washington; *F. politurata*, ibid., Michigan; *F. septentrionale*, p. 161, Michigan and Illinois; *F. floridana*, ibid., Florida; *F. tejonia*, ibid., California; *F. tenuissima*, p. 162, *F. perminuta*, ibid., *F. picea*, p. 163, *F. lincecumii*, ibid., *F. festinata*, p. 164, *F. insana* ("Crazy Ant"), p. 165, *F. masonia*, ibid., *F. saxicola*, p. 166, *F. discolor*, ibid., *F. san sabéana*, p. 167, *F. fatida*, ibid., *F.* (*Tapinoma*) *terricola*, p. 168, *F.* (*T.*) *wichita*, p. 169, *F.* (*Hypochira*) *subspinosa*, ibid., from Texas.

Polyergus texana, Buckley, *l. c.* p. 170, Texas.

Camponotus nutans, Frauenfeld, Verh. zool.-bot. Ges. in Wien, xvii. p. 440, on board the 'Novara;' *C. venustus*, Frauenf. *l. c.* p. 441, on board the 'Novara' at Gibraltar.

Ponera sulcata, Frauenfeld, *l. c.* p. 441, on board the 'Novara' near Gibraltar.

Ponera. Buckley (*l. c.*) describes the following new species of this genus:—*P. texana*, p. 170, *P. amplinoda*, p. 171, *P. elongata*, p. 172, and *P.* (*Ectatomma*) *lincecumii*, ibid., Texas; and *P. pennsylvanica*, p. 171, Pennsylvania.

Odontomachus texana, Buckley, *l. c.* p. 335, Texas.

Myrmica. Buckley describes the following as new North-American species of this genus:—*M. rubra*, p. 335, Texas; *M. subrubra*, p. 336, Washington; *M. californica*, ibid., California; *M. nova eboracensis*, p. 337, New York; *M.* (*Monomarium*, sic) *diversa*, ibid., *M.* (*M.*) *minima*, p. 338, and *M.* (*M.*) *caca* (sic), p. 339, Texas; *M.* (*M.*) *marylandica*, ibid., Washington and Maryland; *M.* (*M.*) *montana*, ibid., Texas; *M.* (*M.*) *lincolata*, p. 340, origin not stated; *M.* (*M.*) *columbiana*, ibid., Washington; *M.* (*M.*) *aquia*, p. 341, Virginia and New York; *M.* (*M.*) *saxicola*, ibid., Texas; *M.* (*M.*) *atra*, p. 342, Georgetown, D.C.; *M.* (*Tetmamorium*, sic) *exigua*, ibid., Washington; *M.* (*Diplorhoptrum*) *scabrata*, p. 343, Connecticut; *M.* (*Atta*) *sabeana*, ibid., and *M.* (*A.*) *sublanuginosa*, ibid., Texas.

Atta. Buckley (*l. c.*) describes 5 new North-American species of this genus, namely:—*A. lincecumii*, p. 344, *A. picea*, ibid., *A. brazoensis*, p. 345, and *A. coloradensis*, p. 346, Texas; *A. pennsylvanica*, p. 345.

Œcodoma virginiana, Buckley, *l. c.* p. 346, Virginia; *Œ. pilosa*, Buckl. *l. c.* p. 348, *Œ. tardigrada*, Buckl. *l. c.* p. 349, *Œ.* (*Atta*) *arborea*, Buckl. ibid., and *Œ.* (*Atta*) *bicolor*, Buckl. *l. c.* p. 350, Texas.

Cryptocerus conspersus, Smith, Ent. Trans. 3rd ser. v. p. 523, pl. 26. fig. 1, Amazons; *C. exiguus*, Smith, *l. c.* p. 524, pl. 26. fig. 4, *C. scutulatus*, Smith, *l. c.* p. 524, pl. 26. fig. 3, and *C. angulosus*, Smith, *l. c.* p. 525, pl. 26. fig. 7, Mexico.

Meranoplus fenestratus, Smith, *l. c.* p. 526, pl. 26. fig. 6, *M. diversus*, Smith, *l. c.* p. 527, pl. 26. fig. 2, and *M. dimidiatus*, Smith, ibid. pl. 26. fig. 8, West Australia.

Cataulacus prætextus, Smith, *l. c.* p. 528, pl. 26. fig. 5, Borneo.

Chrysididæ.

Radoszkovsky (Horæ Soc. Ent. Ross. iii. pp. 225–310) publishes a catalogue of the Chrysididæ of Russia, including 58 species, several of which are described as new. The following known species are figured, and in many cases described:—

Omalus pusillus (Fab.), p. 2, fig. 3; *Elampus ambiguus* (Dahlb.), fig. 4; *E. truncatus* (Dahlb.), fig. 5; *E. productus* (Klug), fig. 6; *E. femoralis* (Eversm.), p. 299, fig. 7; *Hedychrum minutum* (St. F.), fig. 8; *H. coriaceum* (Dahlb.), pl. 3. fig. 9; *H. flaripes* (Eversm.), p. 301, fig. 10; *Chrysis sulcata* (Dahlb.), fig. 11; *C. dichroa* (Klug), fig. 12; *C. cylindrica* (Eversm.), p. 302, pl. 3. fig. 13; *C. cyanura* (Klug), fig. 16; *C. sinuosa* (Dahlb.), pl. 4. fig. 17; *C. elegans* (St. F.), fig. 18; *C. indigotea* (Duf.), fig. 20; *C. cærulans* (Fab.), fig. 19; *C. soluta* (Dahlb.), fig. 21; *C. cyanopyga* (Dahlb.), fig. 22; *C. pyrrhina* (Dalm.), fig. 23; *C. rutilans* (Oliv.), fig. 24; *C. analis* (Spin.), pl. 5. fig. 25; *C. scutellaris* (Fab.), fig. 26; *C. schousboei* (Dahlb.), fig. 27; *C. armena* (Spin.), fig. 28; *C. manicata* (Dahlb.), fig. 29; *C. distinguenda* (Spin.), fig. 30; *C. comparata* (St. F.), fig. 31; *C. amœna* (Eversm.) p. 307, fig. 32; *C. pulchella* (Spin.), pl. 6. fig. 33; *C. zetterstedti* (Dahlb.), fig. 34; *Stilbum calens* (Fab.), fig. 35; *Euchrœus limbatus* (Klug), fig. 36; *E. purpuratus* (Fab.), p. 308, figs. 37–40; *E. quadratus* (Klug), fig. 41; and *Parnopes poporii* (Eversm.), fig. 42.

Chrysis dournovii, sp. n., Radoszkovsky, *l. c.* p. 303, pl. 3. fig. 14, and *C. baeri*, sp. n., Radoszk. ibid. pl. 3. fig. 15, Caucasus.

Ichneumonidæ.

Taschenberg (Zeitschr. für die ges. Naturw. xxvii. pp. 228–318) publishes a revision of the species included by Gravenhorst in the first three sections of his genus *Ichneumon*, from which the following synonymic indications may be cited:—1. *monticola* = *Phygadeuon regius* (Tasch.); 3. *alboguttatus* = var. *multicinctus* (Gr.); 4. *nigritarius*, var. 2 = *Amblyteles pseudonymus* (Wesm.); 5. *tenuicornis* = *Platylabus niger* (Wesm.), and var. 1 = *P. fugator* (Wesm.); 6. *nigrocyaneus* = *Plat. armatus* (Wesm.); 8. *fasciatus* = *comitator* (Grav.); 9. *lineator* var. 3 ♀ = *ferreus* (Grav.), and ♂ = *monostagon* (Grav.); 10. *castigator* = *Amblyteles camelinus* (Wesm.); 11. *bilineatus* = ? *consimilis* (Wesm.), and var. 1 = *lineator*, var. 3 (Gr.) = *ferreus* (Gr.); 12. *æthiops* = var. *nigritarius* (Gr.); 13 *b. albimanus* belongs to *Acolobus* (W.); 14. *corruscator*, var. 2 = *luridus* (Gr.); 15. *tristis* = *Eurylabus tristis* (W.); 16. *rubellus* ♂ = *Ectopius rubellus* (W.); 16. *rubellus* ♀ = var. *Diadromus quadriguttatus* (Wesm.); 17. *rufifrons* belongs to *Phygadeuon*; 18. *clericus* = *Eristicus c.* (W.); 19. *canaliculatus* is a *Cryptus*, probably = *C. leucopsis* (Gr.); 20. *spiniger* belongs to *Æthecerus* (W.); 21. *stimulator* = *Phæogenes s.* (W.), and vars. 1 & 2 = *P. callopus* (W.); 22. *brunnicornis* = *Herpestomus b.* (W.); 23. *brevicornis* is a *Phæogenes* and not = *Heterischnus b.* (W.); 24. *annulator*, var. 2 = probably *fabricator* (Gr.), var., and var. 3 = *nigritarius* (Gr.); 25. *tibiator* is a Cryptide;

26. *pumilus*=*Dicælotus p.* (W.); 29*b*. *transfuga*=*Phygadeuon cephalotes* (Gr.); 30. *larvatus*=*Eurylabus l.* (W.); 31. *subsericans*=*Amblyt. s.* (W.); 32. *fossorius* is an *Amblyteles*; var. 2=*A. amputatorius* (W.), var.; var. 1=*I. pallipes* (Gr.); 33. *albosignatus* is not=*albosignatus* (W.); 34. *multicolor* ♂ = *ferreus* (Gr.)=*quæsitorius* (Wesm.), ♀=*lineator*, var. 3 (Gr.); var. 1=*bilineatus*, var. 1 (Gr.); 35. *fuscatus*=*computatorius*, var. 2 ♂ (W.); 36. *ferreus* = ♂ *multicolor*; 37. *trucitator*=*Probolus alticola*, var. 1 (W.); 38. *monostagon*=*indagator* (W.); 39. *trilineatus*=*brischkei* (Ratz.); 43. *digrammus*=*albosignatus* (W.); 44. *pedatorius* is a *Platylabus*=*iridipennis* (Gr.); 46. *fabricator*, vars. 1–10 belong to the same species=*fabricator* (Gr., Tasch.); the described typical form is distinct; 47. *dissimilis* ♀=*zephyrus* (W.), and probably belongs to *Phygadeuon*; 48. *marginellus*=*Gnathoryx m.* (W.); 49. *candidatus*=*Dicælotus c.* (W.); 50. *iridipennis*=*pedatorius* (Gr.); 53. *umbraculosus* = *trilineatus* (Gr.), var.; 54. *luctuosus* 2 forms ♂ =*monostagon*, var. 2 (Gr.), and *semiorbitalis* (=*languidus*, W.), var.; 55*b*. *lacteator*=? *depexus* (W.); 57. *dolorosus*=*Platylabus sollicitus* (W.); 58. *funereus*=*Amblyteles hæreticus* (W.) =*melanogaster*, var. 1 (Gr.), and *fuscipes*+*perilcucus* (Gr.); 61. *melanogaster*, var. 1=*Amblyt. hæreticus* (W.); var. 2 is a new species of *Hepiopelmus*; 62. *pratensis*=*Amblyteles uniguttatus*, var. 9 (Gr., W.); 63. *semiorbitalis* =*computatorius* (W.), var.; var. 1=*languidus* (W.); 64. *sicarius* ♂=*jugatus* (Gr.); 66. *proteus*=*laminatorius* (Gr., W.); 68. *deliratorius* ♂=*oscillator* (W.), ♀=*multiannulatus* (Gr.); 70. *fuscipes* ♂=*Amblyteles funereus* (W.), ♀=*I. fuscipes* (W.); var. 2=*Chasmodes lugens* (W.); 71. *perilcucus* ♂= *Amblyteles funereus* (W.) ♀=*edictorius* (Gr.); var. 1=*A. fossorius* (W.), var.; 72. *edictorius*=*Amblyt. divisorius*, var. 3 (W.); 73. *biannulatus*=*comitator*, var. 1.

Reinhard has published (Berl. ent. Zeits. 1867, pp. 351–374) a fourth instalment of his memoirs on genera belonging to the *Braconides*. In this he treats of the genera *Microdus* (Nees), *Chelonus* (Jur.), *Ascogaster* (Wesm.), and *Calyptus* (Hal.).

Microdus. Reinhard (*l. c.* p. 351) characterizes this genus, excluding *Earinus* (Wesm.), and indicates the distinctive characters and constituent species of the latter in a note. The labial palpi in *Microdus* are generally 4-jointed. The species of this genus, 16 in number, are tabulated (*l. c.* pp. 352–353) and briefly characterized by Reinhard; the known species are:—*M. conspicuus* (Wesm.), *linguarius* (Nees), *clausthalianus* (Ratz.), *tumidulus* (Nees), *cingulipes* (Nees), *pumilus* (Ratz.), *calculator* (Fab.)=*abscissus* (Ratz.), *dimidiator* (Nees)=*cingulator* (Ratz.), *lugubrator* (Ratz.), *rufipes* (Nees), *rugulosus* (Nees), and *mediator* (Nees).

Chelonus. Reinhard (*l. c.* pp. 358, 359) remarks on some species of this genus described by Nees & Wesmael. The specimens described, although said to be ♀, prove to be ♂. The synonymy of the species is as follows:—1. *C. sulcatus* (Jur.) ♂ =*sulcatus* (Nees), ♀=*fenestratus* ♀ (Nees)=*contractus* (Nees)=? *lugubris* (Wesm.); *C. sulcatus* (Nees) ♂ =*annulipes* (Wesm.); 2. *C. parcicornis* (H.-Sch.)=*curytheca* (Wesm.); 3. *C. microphthalmus* (Wesm.). Reinhard describes the ♂ of 2 new species, the ♀ of which may have been described by Herrich-Schäffer. If this supposition be correct, these 5 species will differ from *Chelonus* by the presence of an anal pit in the ♂, and of only 16 joints in the antennæ of the ♀, and may form a distinct genus.

Ascogaster. Reinhard (*l. c.* p. 361) characterizes this genus, and tabulates

and describes the species, of which he enumerates 17, or 19 including *A. limitatus* (Wesm.) and *bisulcatus* (H.-Sch.), with which he is unacquainted. The known species are as follows:—*A. excisus* (H.-Sch.), *armatus* (Wesm.) =*luteicornis* (H.-Sch.), *instabilis* (Wesm.)=*pallida* (Ruthe)=*femoralis*+*ruficentris* (H.-Sch.), *canifrons* (Wesm.), *rufipes* (Lat.)=*bidentulus* (Wesm.) =*pallipes* (H.-Sch.)=*multiarticulatus* (Ratz.), *rufidens* (Wesm.)=*rufipes* (H.-Sch.)=*lævigator* (Ratz.), *gonocephalus* (Wesm.), *elegans* (Nees), *varipes* (Wesm.)=*atriceps* (Ratz.), *quadridentatus* (Wesm.)=*impressus*+*quadridens* (H.-Sch.)=*similis* (Ratz.), *similis* (Nees)=*brevicornis* (Wesm.)=*monilicornis* (H.-Sch.), *bicarinatus* (H.-Sch.), *ruficeps* (Nees), and *annularis* (Nees).

Calyptus (=*Brachistes*, Wesm.). Reinhard (*l. c.* pp. 369–370) remarks upon the characters by which this genus may be distinguished from *Sigalphus* and *Eubadizon*,—from the former by the margination of the abdomen being confined to the base; from the latter by the first segment being distinctly narrowed towards the base, and scarcely longer than the breadth of its apical margin. Reinhard tabulates 20 species of this genus (*l. c.* pp. 370, 371), 10 of which are described as new. The known species are:—*C. nasutus* (Wesm.), *uncigenis* (Wesm.), *ruficoxis* (Wesm.), *minutus* (Ratz.), *nigricoxis* (Wesm.), *fuscipalpis* (Wesm.), *longicaudis* (Ratz.), *robustus* (Ratz.), *rugosus* (Ratz.), *atricornis* (Ratz.). *Sigalphus fasciatus* (Nees) belongs to this genus, but is unknown to the author. *C. puber* (Hal.) is probably identical with *C. uncigenis*. *C. tibialis* (Hal.) is unknown to Reinhard.

Marshall describes (Ent. M. Mag. iii. pp. 190–191) a short-winged *Cryptus* found by him in the Isle of Wight, which was supposed to be a specimen of *C. incubitor* (Ström) with abnormally reduced wings, or perhaps a new species, for which Desvignes proposed the name of *C. brevipennis*. Marshall describes the wings, which are perfectly symmetrical. He suggests that *Brachypterus means* (Grav.) = *Pterocormus means* (Först.) is probably a similar short-winged form of *Ichn. crassipes* (Linn.).

The habits of *Ophion macrurum* (Linn.) as a parasite of *Telea polyphemus* are described by Trouvelot, who also gives a woodcut of the insect (Amer. Nat. i. p. 89).

Taschenberg communicates some observations on the development of the parasites of *Nænia typica*. Zeitschr. ges. Naturw. xxvii. p. 188.

F. Smith refers to instances in which Ichneumonidæ with long ovipositors pass those organs through solid wood in search of the larvæ in which they are parasitic. Proc. Ent. Soc. 1867, p. lxxxv.

Platygaster boscii and *P. niger*? (Nees) are noticed by A. Forel as parasitic on *Cecidomyia brassicæ* (Winn.). Bull. Soc. Vaud. Sci. Nat. ix. p. 83.

Pimpla sagax and *Glypta resinanæ* have been bred by Kawall from *Coccyx resinana*. Stett. ent. Zeit. 1867, p. 122.

Oresbius, g. n., Marshall, Ent. M. Mag. iii. p. 193. Allied to *Aptesis*; antennæ unicolorous, twice as long as head and thorax; metathorax not areated. Sp. *O. castaneus*, sp. n., Marsh. *l. c.* p. 194 (fig. p. 193), Perthshire. Also captured by Sharp on Goatfell (Ent. M. Mag. iv. p. 18).

New species:—

Ichneumon cambriensis, Desvignes, Ent. M. Mag. iv. p. 130, Wales.

Phygadeuon reinhardii, Jaennicke, Berl. ent. Zeitschr. 1867, p. 154, and *P. gracile*, Jaenn. *l. c.* p. 155, near Frankfort.

Catoglyptus schenckii, Jaennicke, *l. c.* p. 155, Taunus.

Elinius hydrelliæ, Kawall, Stett. ent. Zeit. 1867, p. 121, parasitic on *Hydrellia griseola* (Fall.) in barley.

Hepiopelmus aureosericeus, Taschenberg, Zeitschr. für die ges. Naturw. xxvii. p. 316.

Bracon truncorum, Goureau, Insectes nuisibles, p. 52, parasitic on *Callidium sanguineum*.

Spathius ferrugatus, Goureau, *l. c.* p. 55, parasitic on *Callidium variabile*.

Microdus arcuatus, Reinhard, *l. c.* p. 353, Bautzen and Saxon Switzerland ?; *M. nugax*, Reinh. *l. c.* p. 354, Erzgebirge, Frankfort; *M. fortipes*, Reinh. *l. c.* p. 356, France and Frankfort; *M. brevicaudis*, Reinh. ibid., Gastein.

Chelonus nitens, Reinhard, *l. c.* p. 360 (♀ = *erosus*, H.-Sch. ?); *C. risorius*, Reinh. ibid. (♀ = *subemarginatus*, H.-Sch. ?).

Ascogaster albitarsus, Reinhard, *l. c.* p. 364, Prussia; *A. tersus*, Reinh. *l. c.* p. 366, Frankfort; *A. neesii*, Reinh. *l. c.* p. 368 (= *C. klugii*, Nees, ♂), Germany.

Calyptus. Reinhard (*l. c.*) describes the following 10 new species of this genus:—*C. cruentatus* (Ruthe), p. 371, *C. claviventris* (Ruthe), ibid., *C. nigripes* (Ruthe), *C. parvulus* (Ruthe), *C. corrugatus* (Ruthe), p. 372, *C. vagus* (Ruthe), and *C. augustinus* (Ruthe), p. 373, Berlin; *C. opacus*, p. 374, Vienna; *C. gallicus*, ibid., Paris; and *C. exsertor*, ibid. (Frankfort ?).

Chalcididæ.

The forms of this family parasitic on *Aphides* and on certain Coccidæ are noticed by Giraud, Bull. Soc. Ent. Fr. 1867, pp. lxxvii–lxxviii.

Myrmecopsis, g. n., Walker, Ent. Trans. 3rd ser. ii. p. 441. (*Cleonimoidæ* ?) Apterous; head as broad as thorax; face transversely sulcate; antennæ inserted near mouth, flagelliform, 13-jointed, 1 as long as face, 2 elongate, 3 twice as long as 2, 4–12 short, 13 conical; prothorax transverse, well marked; mesothorax very short; metathorax quadrate; petiole very short; abdomen elliptical, wider than thorax, with only one dorsal segment; tibiæ with small spurs; tarsi 5-jointed (♂). Sp. *M. nigricans*, sp. n., Walker, *l. c.* p. 442, North Australia.

Lopodytes, g. n., Rondani, Ann. Soc. Nat. Mod. ii. p. 39. ♂. antennæ 9-jointed, joint 2 shortest, rest nearly equal, generally pilose above; ♀. antennæ 7-jointed, penultimate larger, subovate, all destitute of hairs; wings with a delicate venule near the costa reaching the middle, and there (in the first pair) obliquely deflexed and dilated at apex. Sp. *L. prunicola*, sp. n., Rond. *l. c.* p. 39, parasitic on *Asphondylia pruniperda*.

Sigmophora, g. n., Rondani, *l. c.* p. 40. Allied to *Eulophus*; antennæ 7-jointed, 2–5 subequal, 6 large, subovate, 7 minute; upper wings with a delicate vein to one-third the length of the costa, there sigmoidally curved and touching the costa, not dilated at free apex; a spurious venule in the middle of the base. Sp. *S. scrophulariella*, sp. n., Rond. *l. c.* p. 40 (= *Eul. verbasci*, Vallot ?), parasitic on *Asphondylia scrophulariæ*.

Proctotrupidæ.

Galesus. Marshall (Ent. M. Mag. iii. p. 224) remarks upon the British species of this genus, of which he recognizes 2, namely, *G. fuscipennis* (Curt.) and *G. clypeatus* (Thoms.) = *cornutus* (Curt.) = ? *claviger* (Hal.). Haliday gives *Psilus cornutus* (Panz.) = *Diapria brunnipes* (Nees); but the latter is not

a *Galesus*, as Nees describes its antennæ as 15- instead of 14-jointed. Marshall describes a new species with aborted wings (*vide infrâ*).

Marshall describes both sexes of *Platymischus dilatatus* (Westw.), the ♀ having been previously unknown. He characterizes the genus, and discusses the distinctions between the ♀ and those of allied genera. Ent. M. Mag. iv. pp. 166–167.

Newman records the occurrence of numerous specimens of *Proctotrupes calcar* (Hal.) as parasites upon a *Lithobius forficatus*. Entomologist, iii. pp. 342–344.

Paramesius belytoides, sp. n., Marshall, Ent. M. Mag. iii. p. 223 (fig. p. 224), near London.

Galesus cæcutiens, sp. n., Marshall, *l. c.* p. 225 (fig. p. 224), Surrey and near Edinburgh.

Aneurhynchus nodicornis, sp. n., Marshall, *l. c.* p. 225, Leicestershire.

Cynipidæ.

F. Smith (Ent. M. Mag. iii. pp. 181–183) remarks upon the occurrence of females only among many thousand specimens of species of the genus *Cynips* bred by himself and other entomologists. He refers especially to *C. kollari*, but has also investigated *C. radicis*, *C. folii*, and *C. aptera*, without ever meeting with a male. Smith refers to the supposed discovery of the male of *C. confluens* by Osten-Sacken in America, and remarks that the connexion between this male and the female *C. confluens* is by no means proved.

Neuroterus. Marshall describes the British species of this genus (Ent. M. Mag. iv. pp. 124–126), of which he cites 3, namely :—*N. malpighii* (Hart.) =? *lenticularis* (Oliv.)=? *longipennis* (Fab.), *N. funipennis*, and *N. politus* (Hart.). The male of *N. funipennis* is afterwards described by Marshall, with the gall formed by the species (*l. c.* p. 147), where also *N. reaumurii* (Hart.) is cited as British.

Teras terminalis (Fab.) is also described by Marshall (*l. c.* p. 148).

Cynips. Marshall (*l. c.* pp. 6–8) gives a synopsis of the British species of this genus as restricted. He admits 5 species, namely :—*C. folii* (Linn.), *C. lignicola* (Hart.)=*kollari* (Giraud), *C. radicis* (Fab.), *C. fecundatrix* (Hart.), and *C. ramuli* (Linn.). Of the latter the ♂ has been discovered.

J. Giraud publishes (Bull. Soc. Ent. Fr. 1867, pp. xiii–xvi) a notice of *Cynips fecundatrix* (Hart.) bred from a gall on *Quercus pedunculata*, the "Artichoke-gall" of Réaumur.

Taschenberg publishes some remarks upon galls. Zeitschr. ges. Naturw. xxix. pp. 498–499.

Cynips terminalis. Cornelius (Stett. ent. Zeit. 1867, pp. 63–64) notices the great prevalence of the galls of this species in 1866 near Elberfeld, and records some observations upon them.

Haimhoffen describes and figures (Verh. zool.-bot. Ges. in Wien, xvii. pp. 527–530) the gall produced upon the twigs of *Quercus pedunculata* by *Cynips coriaria* (Hart.), and also gives a full description of that insect. *Synergus incrassatus* (Hart.) was produced from the galls as an inquiline; and of other parasites 2 species of *Eulophides* occurred.

Andricus. Marshall notes (*l. c.* pp. 101–102) the British species of this genus, namely :—*A. trilineatus*, *noduli*, and *moniliatus* (Hart.), and a new species, *Andricus hartigii*.

Urocerida.

Cephus pygmæus. Wallschlegel communicates (Mitth. Schweiz. ent. Gesellsch. ii. pp. 153–156) a note on the occurrence and natural history of this insect, which, in 1866, inflicted much injury on the crops in the Aargau. Stierlin appends some remarks to this paper (*l. c.* pp. 156–157).

Taschenberg records a case of the boring of lead by *Sirex juvencus*. Zeitschr. ges. Naturw. xxvii. p. 459.

Tenthredinidæ.

E. Norton has commenced (Trans. Amer. Ent. Soc. i. pp. 31–84 & 193–324) a descriptive catalogue of the North-American species of this family. In the preliminary portion he indicates the general classification of the Hymenoptera and the terminology of the Tenthredinidæ, and gives a tabular synopsis of the genera belonging to the Tenthredinidæ and Urocerida. Of the former he recognizes 63 generic groups; but 2 of these, formed by sections of Klug's genus *Hylotoma*, do not receive generic names. In the catalogue itself the genera and species are all characterized, and the latter sometimes tabulated.

Snellen van Vollenhoven (Tijdschr. v. Entom. 2de ser. i.) describes and figures all the stages of the following species:—*Macrophya albicincta* (Schr.), pp. 189–195, pl. 7; *Phyllotoma melanopyga* (Klug), pp. 196–201, pl. 8; and a new species of *Nematus*.

Frauenfeld notices (Verh. zool.-bot. Ges. in Wien, xvii. pp. 783–784) 3 species of this family of which the larvæ occurred in great numbers in 1867. One of these fed upon various species of *Iris*; another was *Hylotoma berberidis*; and the third fed upon various species of *Rumex*.

Healy describes (Ent. M. Mag. iv. pp. 105–107) the natural history of a species of *Phyllotoma* (*P. aceris*, M'L., *vide infrà*), the larva of which mines the leaves of the maple, and constructs for itself a small circular case from the upper and lower membranes of the leaf in which to pass the winter and undergo its metamorphosis. The species is identified by M'Lachlan (*l.c.* p. 123) with *P. aceris* (Kalt.) described in his paper on the German phytophagous insects.

F. Löw (Verh. zool.-bot. Ges. in Wien, xvii. pp. 747–748) gives further details on the construction of the larva-sac of *Lyda inanita* (Vill.) in correction of his former statements. He figures a rose-leaf with the sac attached to it, to show the mode in which additions are made.

Athalia centifoliæ. The habits of this species as injurious to the Colza plant in the Canton de Vaud are noticed by A. Forel, Bull. Soc. Vaud. Sci. Nat. ix. pp. 74–75.

Athalia spinarum (Fab.). On this insect as injurious to rape and turnips, see Künstler, Verh. zool.-bot. Ges. in Wien, xvii. pp. 943–946.

Crœsus septentrionalis. F. Smith & M'Lachlan on the natural history of this species. Proc. Ent. Soc. 1865, p. 129.

M'Lachlan remarks on the rarity or total absence of ♂ sawflies, the ♀ of which are common, instancing *Strongylogaster cingulatus* and *Selandria stramineipes*. Proc. Ent. Soc. 1867, p. xc.

M'Lachlan (Proc. Ent. Soc. 1867, p. xcix) notices a gynandromorphous specimen of *Dolerus madidus* (Klug) and monstrous examples of *Hylotoma fasciata* (St. F.) and *Tenthredo scalaris* (Klug), the last-mentioned insect having 3 wings on the right side.

M'Lachlan (Ent. Mag. iv. pp. 102–105) notices several previously unrecorded British species of this family.

Themos, g. n., Norton, *l. c.* p. 58. Allied to *Hylotoma*; marginal cell not appendiculate, 3 submarginal cells. Sp. *Hyl. olfersii* and *surinamensis* (Klug); *T. hyaline*, sp. n., Norton, *l. c.* p. 58, Pennsylvania.

New species:—

Trichiosoma lanuginosa, Norton, *l. c.* p. 44, California.

Abia kennicotti, Norton, *l. c.* p. 46 (North America); *A. caprifolium*, Norton, ibid., Illinois.

Cephalocera calcar, Norton, *l. c.* p. 51, Mexico.

Sericocera plumicornis, Norton, *l. c.* p. 52, *S. villosus*, Nort. *l. c.* p. 53, and *S. alternator*, Nort. ibid., Mexico.

Schizocerus ebenus, Norton, *l. c.* p. 55, New York; *S. sericeus*, Nort. ibid., Maine, Illinois; *S. privatus*, Nort. *l. c.* p. 56, New Orleans.

Ptilia filiformis, Norton, *l. c.* p. 62, Mexico.

Hylotoma fascialis, Norton, *l. c.* p. 69, and *H. semifuscus*, Norton, ibid., Mexico.

Pristiphora tibialis, Norton, *l. c.* p. 76, Atlantic States; *P. relativus*, Nort. *l. c.* p. 77, Great Slave Lake; *P. idiota*, Nort. ibid., and *P. identidem*, Nort. ibid. Illinois.

Pristiphora sycophanta, Walsh, Proc. Ent. Soc. Phil. vi. p. 263, inquiline in gall *Salicis brassicoidis*.

Phyllotoma aceris, M'Lachlan, Ent. M. Mag. iv. p. 104, Britain (*v. ante*).

Nematus aquilegiæ, Vollenhoven, Tijdsch. v. Entom. 2^de^ ser. i. p. 202, pl. 9, Gelderland.

Nematus. Norton (Trans. Amer. Ent. Soc. i.) describes the following new North-American species of this genus:—*N. concolor, labradoris, malacus* (p. 196), *fallax, winnipeg, monela* (p. 198), *luteolus, satkatchewan* (p. 200), *violaceipennis* (p. 201), *rufo-fasciatus* (p. 205), *hudsonicus, sumptus* (p. 207), *pleuricus* (p. 208), *lateralis* (p. 211), *placentus* (p. 213), *trilineatus* (p. 215), *trivittatus* (p. 218), *aureopectus* (p. 219), and *chloreus* (p. 221).

Nematus. The following species of this genus are described by Walsh (Proc. Ent. Soc. Phil. vi.) as inhabiting galls on various species of willow:—*N. s. pomum*, p. 255; *N. s. desmodioides*, p. 257; *N. s. pisum*, p. 259; *N. inquilinus*, p. 260; *N. hospes*, p. 261; *N. mendicus*, ibid.; and *N. fur*, p. 263.

Perreyia comptus, Norton, *l. c.* p. 223, and *P. capitulum*, Norton, ibid., Mexico.

Euura. Walsh (Proc. Ent. Soc. Phil. vi.) describes the following new species of this genus, from galls on North-American species of willow:—*E. s. gemma*, p. 250; *E. s. ovum*, p. 252; *E. s. nodus*, p. 253; and *E. perturbans*, p. 254.

LEPIDOPTERA.

A. *Works in progress.*

Hewitson, W. C. Exotic Butterflies, being illustrations of new species; with coloured drawings and descriptions. Parts 61–64: January to October 1867.

——. Illustrations of Diurnal Lepidoptera.—Part III. Lycænidæ. London: Van Voorst, 1867. 4to, pp. 77–114, pls. 31–46.

The third part of this work, which appeared in 1867, is entirely occupied by descriptions and figures of species of the genus *Thecla*, of which the author here brings the number to 164.

——. Descriptions of One Hundred new Species of Hesperidæ. Part. I. London: Van Voorst, 1867, pp. 25.

In this part Hewitson publishes short descriptions of 50 species of Hesperiides in order to secure the right of priority. He says himself that he considers these descriptions, "unaided by figures, more than worthless;" and, after this acknowledgment, it may be questionable whether the claim of priority would hold good if any of the species be recognizably described and figured by another author before Hewitson has the opportunity of publishing them in his 'Exotic Butterflies.'

Stainton, H. T. The Natural History of the Tineina. Vol. x. containing *Gelechia*, part 2. 8vo, pp. ix & 304, with 8 plates. London: Van Voorst, 1867.

This volume of Stainton's great work on the Tineina, which completes his first series of ten volumes, is devoted to a second series of 24 species of the genus *Gelechia*, which are described and figured in all their stages in the same way as the species noticed in former volumes. This volume also contains a general account of the genus *Gelechia*.

B. *Separate Works.*

Berce, E. Papillons. Description de tous les Papillons qui se trouvent en France, indiquant l'époque de l'éclosion de chaque espèce, les localités qu'elle fréquente, la plante qui nourrit la Chenille, et le moment où il convient de la chasser, &c. &c. Dessins et gravures par T. Deyrolle. Tome i. Paris, 1867, pp. 251, with 18 coloured plates.

The object of this work, which the Recorder has not seen, is sufficiently indicated in its title as given above. According to a notice in Guérin's 'Magasin de Zoologie,' the work has been well executed by its author, and is especially rich in information as to the habits of the insects and the localities frequented by them. The figures by T. Deyrolle are also spoken of in terms

of high praise. The work is expected to be completed in 4 volumes.

Stainton, H. T. The Tineina of Syria and Asia Minor. 8vo. London: Van Voorst, 1867, pp. vi & 84.

In this little work Stainton brings together the whole literature of the Tineina of Western Asia, and especially of the Levant, describing or reprinting the descriptions of species published by Loew, Mann, Zach, Kindermann, Lederer, Zeller, &c., describing some new species, chiefly collected by O. P. Cambridge, giving lists of the species collected by different travellers, and, finally, a table of geographical distribution, which also furnishes indications of the comparative abundance of the species in the localities where they occur. As a starting-point in the thorough investigation of this department of the natural history of the Levant, this book is of great importance.

Stainton, H. T. British Butterflies and Moths: an Introduction to the study of our Native Lepidoptera. London, Reeve & Co., 1867, pp. xii and 292, with 16 plates.

This little volume is one of the series of Popular Manuals of British Natural History other parts of which have already been noticed in previous 'Records' (see 1866, pp. 251, 278, and 411). Stainton has described the general characters and natural history of the Lepidoptera, illustrating the latter by taking particular examples among British species, characterized the subordinate groups and families in accordance with the system adopted by him in his 'Manual of Lepidoptera,' and, finally, described a considerable proportion of the commoner and more striking species of this order which inhabit Britain. These descriptions, with notes upon the habits of the species, occupy the greater part of the work. They are illustrated by numerous coloured figures, respectably executed by Robinson. There are also two short chapters on collecting Lepidoptera.

C. *Papers published in Journals &c.*

a. *Descriptive &c.*

Allard, Gaston. Notes sur les Insectes de l'Algérie. Ann. Soc. Ent. Fr. 1867, vii. pp. 311–322, pl. 6.

In this paper Allard gives a list of the Lepidoptera captured by him in Algeria, with notes on the mode of occurrence &c. of some of them, and descriptions of several new species.

Ballion, E. Synonymische Bemerkungen über einige Schmetterlinge. Stettiner entom. Zeitung, 1867, pp. 340–341.

Bates, H. W. A Catalogue of Erycinidæ, a family of Diurnal Lepidoptera. Journ. Linn. Soc. vol. ix. Zool. pp. 367–372 (commencement).

Bates, H. W. On a Collection of Butterflies formed by Thomas Belt, Esq., in the interior of the Province of Maranham, Brazil. Trans. Ent. Soc. Lond. 1867, v. pp. 535–546.

In this paper Bates discusses some points in the variation of species of *Heliconius* and *Leptalis*, and describes several new species of Rhopalocera.

——. (See "Coleoptera.")

Butler, A. G. Description of a new genus of Diurnal Lepidoptera, belonging to the family *Satyridæ*. Ann. & Mag. Nat. Hist. 1867, vol. xix. pp. 49–51, pl. 2.

——. Observations on the variation of *Cyllo leda* of Linnæus, and on the different forms of that Insect in the National Collection. Ibid. pp. 51–54.

——. Description of a new genus and one new species of *Satyridæ*. Ibid. pp. 124–127, pl. 3.

——. Descriptions of five new genera and some new species of Satyride Lepidoptera. Ibid. pp. 161–167, pl. 4.

——. Descriptions of some remarkable new species and a new genus of Diurnal Lepidoptera. Annals & Mag. Nat. Hist. 1867, vol. xx. pp. 216–217, pl. 4.

——. Description of a new species of Tiger-Moth in the possession of Mr. T. W. Wood. Ibid. pp. 218–219, pl. 4.

——. Descriptions of new or little-known species of Asiatic Lepidoptera. Ibid. pp. 399–404, pls. 8 & 9.

——. Description of a new genus and species of American *Satyridæ*, from the Collection of Mr. H. W. Bates. Ibid. pp. 404–405, pl. 9.

——. Revision of the group of Lepidopterous Insects hitherto included in the genus *Pronophila* of Westwood. Ibid. pp. 266–268.

——. Description of a new genus of Diurnal Lepidoptera belonging to the family *Erycinidæ*. Proc. Zool. Soc. 1867, pp. 37–39.

——. Descriptions of some new species of *Satyridæ* belonging to the genus *Euptychia*. Ibid. pp. 104–110, pls. 11 & 12.

——. Note on the identity of certain species of *Lycænidæ*. Ibid. pp. 34–36.

——. Remarks upon the Fabrician species of the Satyride genus *Mycalesis*; with Descriptions and Notes on the named varieties. Ibid. pp. 718–721.

——. A Monograph of the genus *Lemonias*, with descriptions of new species in the Collection of the British Museum,

including other forms sometimes placed in that genus. Journ. Linn. Soc. ix. Zool. pp. 213–229, pls. 6 & 7: 1867.

Butler, A. G. A Monograph of the genus *Hestia*, containing descriptions of forms not hitherto noticed; with a tabular view of the species of *Danaidæ* and remarks upon their natural affinities. Trans. Ent. Soc. Lond. 1867, v. pp. 467–484.

——. Description of a new genus of Diurnal Lepidoptera belonging to the family *Erycinidæ*, with characters of two new species. Ent. Monthly Mag. vol. iii. pp. 174–176.

——. Corrections of Errors hitherto existing in the nomenclature of several species of the genus *Nymphidium*. Ibid. pp. 221–223.

Contains descriptions of two new species.

——. Description of a new genus and species of Diurnal Lepidoptera. Ibid. iv. pp. 121–122: November 1867.

——. Remarks on the Nomenclature of the European genera of Satyridæ Lepidoptera. Entomologist, iii. pp. 277–281.

Christoph, H. Beschreibung einiger neuer Schmetterlinge aus der Umgegend von Sarepta. Stettiner entom. Zeitung, 1867, pp. 233–240.

——. Biologische Notizen über einige Schmetterlinge. Ibid. 1867, pp. 240–246.

Cotty, Ernest. Observations à propos du *Bombyx cynthia*. Mém. Soc. Linn. du Nord de la France, 1866, pp. 147–158.

C. Cruger (Stett. ent. Zeit. 1867, pp. 285–306) gives a full analysis of the first three parts of Scott's 'Australian Lepidoptera,' with translations of the descriptions.

Dohrn, C. A. De Phalæna Bombyce. Stettiner entom. Zeitung, 1867, pp. 247–252.

In this paper Dohrn notices the contents of a curious academical dissertation published at Upsal by J. Lyman in 1756. It treats of the history and natural history of the Silkworm; and Dohrn believes that some portions of it are from Linné's hand.

Dronke, F. Note sur la maladie des vers à soie. Revue et Magasin de Zoologie, 1867, pp. 123–128.

Edwards, W. H. On certain North-American species of *Satyrus*. Proc. Ent. Soc. Philad. vol. vi. pp. 195–200.

——. Description of certain species of Diurnal Lepidoptera found within the limits of the United States and British America. No. 5. Ibid. pp. 200–208.

Fallou, J. (See Girard).

Frauenfeld, Georg von. Ueber einen Zerstörer der Baumwollkapseln in Egypten. Verhandl. zool.-bot. Ges. in Wien, Band xvii. pp. 785–792.

——. (See "Insecta.")

Frey, H. Die schweizerischen Microlepidopteren. Dritte Abtheilung. Mittheil. schweiz. entom. Gesellsch. Band ii. pp. 169–186, November 1866; and Vierte Abtheilung, *l. c.* pp. 286–303, October 1867.

A continuation of Frey's Catalogue of the Swiss Microlepidoptera, including the Coleophoridæ, Gracilariidæ, Argyresthidæ, Glyphipterygidæ, and Gelechiidæ. As before, notices of the habits of the larvæ are given.

Gærtner, A. Lepidopterologische Mittheilungen. Verhandl. naturf. Vereines in Brünn, Band v. pp. 36–48 : 1867.

Contains notices of the transformations of various species of Lepidoptera.

——. Die Geometrinen und Mikrolepidopteren des Brünner Faunen-Gebietes. Verhandl. naturf. Ver. in Brünn, Band iv. pp. 48–270 : 1866.

A list of the Geometridæ, Pyralidæ, Tortricidæ, Tineidæ, and Alucitidæ of the neighbourhood of Brünn, with remarks on the habits and descriptions of the larvæ of many species.

Girard, Maurice. Notes sur la sériciculture. Ann. Soc. Ent. France, 4e série, tome vii. pp. 381–386.

——. Note sur l'Aberration *Taraxacoides* (Bellier de la Chavignerie) du *Bombyx castrensis* (Linn.). Annales Soc. Ent. France, 4e série, tome vi. pp. 565–567.

——. Note sur une Aberration de la *Pyrameis atalanta* (Linn.). Ibid. pp. 568–570.

Girard, M., & Fallou, J. Variations des Lépidoptères. [Translation of a portion of M'Lachlan's paper on *Sterrha sacraria* &c., with extensive notes by the translators.] Ann. Soc. Ent. France, 4e sér. tome vii. pp. 323–350.

Grandidier, A. Description de quatre espèces nouvelles de Lépidoptères découvertes sur la côte sud-ouest de Madagascar. Rev. et Mag. de Zool. 1867, pp. 272–275.

Grædler, V. Bericht über Zuchtversuche der *Saturnia cynthia* in Bozen. Corr. Blatt zool.-min. Ver. Regensb. xx. pp. 50–56 : 1866.

Grote, A. R. Notes on the Zygænidæ of Cuba. Part I. Proc. Entom. Soc. Philad. vi. pp. 173–189, pl. 5 : 1867.

——. Notes on the Zygænidæ of Cuba. Part II. Ibid. pp. 297–334, pl. 5 : 1867.

This paper completes Grote's revision of the Cuban Zygænidæ, and includes a supplement containing notes on and descriptions of species included in other families, from the Sphingidæ to the end of the Bombycina. Grote also gives a list of the known species. The synonymy of several of Herrich-Schäffer's species is indicated.

Grote, A. R., & Robinson, C. T. Lepidopterological Contributions. Annals Lyc. Nat. Hist. New York, vol. viii. pp. 351–387, pls. 12–14: December 1866.

Contains remarks on the synonomy of some species, and descriptions of new ones.

——, ——. Descriptions of American Lepidoptera. No. 1. Trans. Amer. Entom. Soc. vol. i. pp. 1–30, pls. 1 & 2.

——, ——. Descriptions of American Lepidoptera. No. 2. Ibid. pp. 171–192, pl. 4.

Guenée, —. Note sur deux espèces Linnéennes du genre *Papilio*. Ann. Soc. Ent. Fr. 4e sér. tome vii. pp. 305–310: October 15, 1867.

Guérin-Méneville, —. Notes sur les œufs de vers à soie du mûrier qui n'éclosent, dans notre hémisphère, que la deuxième année après leur ponte. Comptes Rendus, lxiv. pp. 661–663.

——. Faits relatifs à l'introduction et à l'acclimatation, en Europe, des vers à soie du chêne. Ibid. p. 694.

——. Sur l'introduction et l'acclimatation des vers à soie du chêne. Comptes Rendus, lxv. pp. 946–947.

Healy, Charles. A Life-history of *Gracilaria syringella*. Ent. Monthly Mag. vol. iv. pp. 148–150.

Herrich-Schäffer. Die neuesten Arbeiten über die Sphinginen. Corr.-Blatt zool.-min. Ver. Regensburg, xx. pp. 59–64.

Contains notices and criticisms of recent works on the Sphingidæ.

——. Schmetterlinge aus Cuba. (Fortsetzung.) Ibid. pp. 103–109, 113–120, and 130–136: 1866.

——. Prodromus systematis Lepidopterorum. (Fortsetzung.) Ibid. xxi. pp. 100–106, 124–128, 138–144, and 161–172: 1867.

Contains the *Pyralidina* and *Equitina* (H.-Sch.).

Hewitson, W. C. Descriptions of new *Hesperidæ*. Trans. Ent. Soc. Lond. 3rd ser. vol. ii. pp. 479–501: 1866.

——. Descriptions of some new species of Diurnal Lepido-

ptera. Trans. Ent. Soc. Lond. 3rd ser. vol. v. pp. 561–566 : December 1867.

Hinterwaldner, J. M. Beitrag zur Lepidopteren-Fauna Tirols. Zeitschr. des Ferdinandeums &c., 3te Folge, Heft xiii. pp. 211–254.

A list of the Macrolepidoptera of Tyrol, with notes on their geographical distribution and rarity.

Hofmann, Ernst. Drei neue Gelechien und ein neuer *Chauliodus*. Stettiner entom. Zeitung, 1867, pp. 200–207.

Hüber, A. F. Ueber die leichteste und ergiebigste Fangart der Nachtschmetterlinge. Horæ Soc. Entom. Rossicæ, tom. iv. pp. 165–178.

In this paper the author recommends the use of honey daubed on trees for attracting the night-flying Lepidoptera, and gives a list of his captures in August and September.

——. Beitrag zur Bereicherung der Lepidopteren-Fauna von St. Petersburg. Ibid. pp. 189–192 : 1867.

Contains a list of 10 species not included in Sievers's Catalogue.

Keferstein, —. Bemerkungen über *Setina*. Stettiner entom. Zeitung, 1867, pp. 278–284.

Klipphausen. (See Von Ziegler.)

Knaggs, H. G. Notes on Collecting, Management, &c. (*Lepidoptera*). Continued. Ent. Monthly Magazine, vol. iii. pp. 202–204.

On the management of the larvæ, and especially on the influence of variation of food upon the colour &c. of the imago.

——. New species of *Scoparia* from New Zealand, collected by R. W. Fereday, Esq. Ibid. iv. pp. 80–81.

——. Notes on new and rare British Lepidoptera (excepting *Tineina*) in 1867. Entom. Annual, 1868, pp. 97–126.

In this paper the author records the additions made in the year 1867 to the list of British Lepidoptera (11 in number), remarks upon various disputed British species, and gives a tabular list of captures of rare species, and of the discovery of the larvæ of British species during the same period.

Lucas, H. Note sur la *Morpho hecuba*, Lépidoptère de la section des Achalinoptères et de la tribu des Morphides. Ann. Soc. Ent. France, 4e sér. vii. pp. 659–664.

Mabille, P. Notices sur les Lépidoptères de la Corse. 1re notice. Ann. Soc. Ent. France, 4e sér. vi. pp. 545–564, pl. 8.

——. Notices sur les Lépidoptères de la Corse, avec une Enumération monographique des Eupithécies de la Corse. 2e notice. Ibid. vii. pp. 635–658, pl. 14.

Maclachlan, Robert. Observations on some remarkable varieties of *Sterrha sacraria*, Linn., with general Notes on Variation in Lepidoptera. Trans. Ent. Soc. Lond. 3rd ser. vol. ii. pp. 453–468, pl. 23 : 1866.

Mann, Josef. Schmetterlinge gesammelt im J. 1866 um Josefsthal in der croatischen Militärgrenze. Verhandl. zool.-bot. Gesellsch. in Wien, Band xvii. pp. 63–76, pl. 9.

A list of captures, with descriptions of two new species, and some introductory remarks on the districts in which they were collected.

——. Schmetterlinge gesammelt im Jahre 1867 in der Umgebung von Bozen und Trient in Tyrol. Verhandl. zool.-bot. Ges. in Wien, Band xvii. pp. 829–844.

——. Zehn neue Schmetterlingsarten. Ibid. pp. 845–852.

Maurissen, A. H. Macrolépidoptères observés dans le Duché de Limbourg. Tijdschrift voor Entom. 2de serie, Deel i. pp. 169–188 : 1866.

Millière, P. Iconographie et Description de Chenilles et Lépidoptères inédits. 16e et 17e livraisons. Ann. Soc. Linn. de Lyon, tome xiv. pp. 297–388 : 1867.

Mitchell, J. Remarks on Captain Hutton's paper "On the Reversion and Restoration of the Silkworm." Trans. Ent. Soc. Lond. 3rd ser. vol. ii. pp. 443–444.

Moore, Frederic. On the Lepidopterous Insects of Bengal. Continued (see 'Record,' 1866, p. 439). Proc. Zoological Society, 1867, pp. 44–99, pls. 6 & 7, pp. 612–686, pls. 32 & 33.

These papers contain the conclusion of Moore's catalogue of Bengalese Lepidoptera, with a list of additional species belonging to the families noticed in its former part.

Motschulsky, V. Catalogue des Lépidoptères rapportés des environs du fl. Amour depuis la Schilka jusqu'à Nikolaevsk. Bull. Soc. Nat. Moscou, tome xxxix. pt. 2. pp. 116–119 : 1866.

A list of species, with descriptions of a new *Argynnis* and a new *Fidonia*.

Packard, A. S. View of the Lepidopterous Fauna of Labrador. Proc. Boston Soc. Nat. Hist. vol. xi. pp. 32–63.

——. The Clothes-Moth. American Naturalist, vol. i. pp. 423–427.

Prützner, Julius. Verzeichniss der in der Umgegend von Berlin vorkommenden Schmetterlinge. Berliner entom. Zeitschrift, 1867, pp. 195–208.

A catalogue of the Macrolepidoptera of the vicinity of Berlin.

PRESAS, MANUEL J. Mariposas. Anuario dela Seccion de Ciencias del Liceo de Matanzas, Ano 1. tomo i. pp. 229–246 : 1866.

A general account of the structure, habits, classification, &c. of Lepidoptera, with especial reference to those of Cuba.

PRITTWITZ, O. VON. Lepidopterologisches. Stettiner entom. Zeitung, 1867, pp. 257–277.

Contains a long series of observations on the synonymy, habits, &c. of various Lepidoptera, both European and exotic. A few new species are described.

RAMBUR, —. Catalogue systématique des Lépidoptères de l'Andalousie. Paris, 1866.

This work, which has been published in livraisons, is referred to by Bellier de la Chavignerie; but the Recorder has not seen it.

ROBINSON, C. T. (See GROTE, A. R.)

SCHLEICH, —. Einige microlepidopterologische Beobachtungen über eine neue *Nepticula*, die Raupe von *Gelechia micella* und über *Gracil. imperialella*. Stettiner entom. Zeitung, 1867, pp. 449–455.

——. Ueber den Fang und die Behandlung der Microlepidopteren. Ibid. pp. 131–141.

SEMPER, GEORG. Beiträge zur Entwicklungsgeschichte einiger Ostasiatischer Schmetterlinge. Verhandl. zool.-bot. Gesellsch. in Wien, Band xvii. pp. 697–702, pl. 23.

Descriptions and remarks founded on the notes made by Carl Semper in the Philippines.

SIEVERS, J. C. Verzeichniss der Schmetterlinge des St. Petersburger Gouvernements. Horæ Soc. Entom. Rossicæ, tom. iv. pp. 49–77.

——. Beitrag zur Fauna des St. Petersburger Gouvernements für 1865 und 1866. Ibid. v. pp. 3–5 : 1867.

Contains a supplementary list of Lepidoptera captured in 1865 and 1866.

SNELLEN, P. C. T. De inlandsche Soorten van het Geslacht *Eupithecia*, Curtis. Tijdschrift voor Entom. 2de serie, Deel i. pp. 97–168, pls. 3–6 : 1866.

——. De Rups van *Depressaria ultimella*, Stainton. Tijdschrift voor Entom. 2de serie, Deel iv. pp. 26–30 : 1867.

SPEYER, A. Lepidopterologische Mittheilungen. Stettiner entom. Zeitung, 1867, pp. 65–76, 349–357 : on *Gnophos ophthalmicata* and its allies. Pp. 416–418 : on *Gnophos serotinaria*.

——. Bemerkungen über einige englische Schmetterlinge. Ibid. 1867, pp. 125–128.

STAINTON, H. T. Ueber *Gelechia sepiella* und *Gel. triannulella*. Stettiner entom. Zeitung, 1867, p. 80.

——. In Memoriam. Carl von Heyden. Entom. Annual, 1868, pp. 8–53.

In this paper, continued from the 'Annual' for 1867, Stainton prints translations of Von Heyden's notices and descriptions of Tineidæ and Pterophoridæ.

——. New British Tineina. Ibid. pp. 127–133.

——. Observations on Tineina. Ibid. pp. 134–155.

STAUDINGER, O. Einige neue Lepidopteren (sämmtlich aus der Sammlung des verstorbenen O. Gruner). Stettiner entom. Zeitung, 1867, pp. 100–110.

——. *Gelechia petasitella* und *Phyllobrostis hartmanni*. Ibid. pp. 210–212.

STEUDEL, —. Ueber das Tödten und Aufspannen der Kleinschmetterlinge. Württ. naturw. Jahreshefte, xxii. pp. 243–252.

STRÖM, V. Danmarks Sommerfugle i Kort Oversigt. Naturhist. Tidsskrift, 3rd series, vol. iv. pp. 109–140 (1866), and 381–414 (1867).

These are the first portions of a synopsis of the Danish species of Lepidoptera. They carry the classification to the end of the Bombycina.

TIMINS, DOUGLAS C. A Monograph of the genus *Thais* of the family Papilionidæ. Proc. Ent. Soc. 1867, pp. ci–ciii.

TROUVELOT, L. The American Silkworm. American Naturalist, vol. i. pp. 30–38, 85–94, & 145–149.

An account of *Telea polyphemus*.

VLACOVICH, G. P. Sui corpuscoli oscillanti del Bombice del Gelso. Atti R. Istituto Veneto, tomo xi. pp. 1053–1074, & 1189–1236, and xii. pp. 139–170, & 269–298.

VOLLENHOVEN, S. C. SNELLEN VAN. Description de deux nouvelles espèces de Lépidoptères. Tijdschrift voor Entom. 2^de^ serie, Deel i. pp. 209-210, pl. 10: 1866.

WALKER, F. Characters of some undescribed Heterocerous Lepidoptera. Journ. Linn. Soc. vol. ix. pp. 181–199: September 1867.

In this paper Walker makes some remarks upon subfamilies of Moths, and describes a considerable number of new species from Bogota, some of which are given as types of new genera.

WALLACE, ALEXANDER. On some variations observed in *Bombyx cynthia* in 1866. Trans. Ent. Soc. Lond. 3rd ser. vol. v. pp. 485–492.

Wallace, Alexander. On the Oak-feeding Silkworm from Japan, *Bombyx yamamai* (Guérin-Méneville). Trans. Ent. Soc. Lond. 3rd ser. vol. v. pp. 355–428.

This is a second prize-essay, on Silk-producing Moths, published by the Entomological Society of London.

Wallace, A. R. On the *Pieridæ* of the Indian and Australian Regions. Trans. Ent. Soc. Lond. 3rd series, vol. iv. pp. 301–416, pls. 6–9.

Wocke, M. F. Zwei neue Arten von *Chauliodus*. Stettiner entom. Zeitung, 1867, pp. 208–209.

Wullschlegel, J. Ueber die Zucht von Ja-ma-maï im Jahr 1866. Mittheil. schweiz. entom. Gesellsch. Bd. ii. pp. 151–153: November 1866.

Zeller, P. C. Ueber die europäischen Setina-Arten. Zweiter Artikel. Stettiner entom. Zeitung, 1867, pp. 33–49.

——. Naturgeschichte der *Fidonia fasciolaria*. Ibid. pp. 178–183.

——. Ueber das Entschuppen der Schmetterlingflügel. Ibid. pp. 184–187.

In this paper Zeller describes the process which he adopts for freeing the surface of the wings of Lepidoptera from their scales.

——. "Skandinaviens Fjädermott (*Alucita*, Linn.)" besprochen von P. C. Zeller. Ibid. pp. 321–339.

This paper contains an abstract of Wallengren's paper on the Scandinavian Pterophorina, with remarks upon some parts of it.

——. Einige von Herrn Pickard Cambridge, besonders in Aegypten und Palästina, gesammelte Microlepidoptera. Ibid. pp. 365–387.

——. Einige ostindische Microlepidoptera. Ibid. pp. 387–415, pl. 2.

A notice, with descriptions of new species, of the *Pyralidæ* collected in India by Atkinson. The paper also includes descriptions of 2 new genera of *Tineidæ*, and of 3 species of *Pterophoridæ*.

——. Crambina, Pterophorina, and Alucitina collected in Palestine by the Rev. O. P. Cambridge in 1865. Trans. Ent. Soc. 3rd ser. vol. v. pp. 453–460, pl. 23: 1867.

——. Choreutidæ and Crambina collected in Egypt by the Rev. O. P. Cambridge, January to April 1864. Ibid. pp. 461–466, pl. 24: 1867.

——. The Natural History of *Lycæna medon*, Hufnagel (*Polyommatus agestis*, Ochsenheimer). Ent. Monthly Mag. vol. iv. pp. 73–77.

Ziegler, von, und Klipphausen, —. Ueber die europäischen Arten der Rhopaloceren-Gattung *Melitæa*, Fab. Stettiner entom. Zeitung, 1867, pp. 418–428.

b. *Anatomical and Physiological.*

Balbiani, —. Etudes sur la maladie psorospermique des vers à soie. De la maladie observée dans l'œuf et chez l'embryon. Comptes Rendus, lxiv. pp. 574–578. De la maladie chez les jeunes vers récemment éclos. Ibid. pp. 691–694.

——. Sur la prétendue reproduction par scissiparité des corpuscules ou psorospermies des vers à soie. Ibid. pp. 1045–1049.

Béchamp, A. Sur le corpuscule vibrant de la pébrine, considéré comme organisme producteur d'Alcool. Comptes Rendus, lxiv. pp. 231–232.

——. Faits pour servir à l'histoire de la maladie parasitaire des vers à soie appelée *pébrine*, et spécialement du développement du corpuscule vibrant. Ibid. pp. 873–875.

——. Letter à M. le Président au sujet de la communication faite par M. Pasteur le 29 Avril précédent. Ibid. lxiv. pp. 1042–1043.

——. Nouveaux faits pour servir à l'histoire de la maladie actuelle des vers à soie et de la nature du corpuscule vibrant. Ibid. pp. 1043–1049.

——. Sur la transformation du corpuscule vibrant de la pébrine et sur la nature de la maladie des vers à soie dits *restés petits*. Comptes Rendus, lxiv. pp. 1185–1186.

——. Sur la saccharification du corpuscule vibrant de la pébrine. Comptes Rendus, lxv. pp. 42–43.

Bessels, E. Studien über die Entwicklung der Sexualdrüsen bei den Lepidopteren. Zeitschrift für wiss. Zoologie, Band xvii. pp. 545–564, pls. 32–34.

In this valuable paper the author describes the progress of the development of the sexual glands in the Lepidoptera, from their earliest appearance until the larva is ready to undergo its metamorphosis. The difference of sex seems to be perfectly recognizable in the embryo.

Brouzet, —. Note sur le traitement de la pébrine des vers à soie par une solution faible de nitrate d'argent. Comptes Rendus, lxiv. p. 1186.

Claus, C. Ueber das Männchen von *Psyche helix* (*helicinella*) nebst Bemerkungen über die Parthenogenese der Psychiden. Zeitschr. für wiss. Zool. xvii. pp. 470–479, pl. 28.

Contains a notice of the recorded facts connected with the parthenogenetic reproduction of species of *Psyche* and other

sac-bearing Lepidoptera, with a full account of the male of *Psyche helix* and of its development.

Guenée, —. D'un organe particulier que présente une Chenille de *Lycæna*. Annales Soc. Ent. France, 4e série, tome vii. pp. 665–668, pl. 13.

Pasteur, —. Lettres à M. Dumas sur la nature des corpuscules des vers à soie. Comptes Rendus, tome lxiv. pp. 835–836.

——. Lettres à M. Dumas sur la maladie des vers à soie. Ibid. pp. 1109–1120.

Vasco, A. Observations sur la disparition de la membrane dans l'œuf du ver à soie. Comptes Rendus, tome lxiv. pp. 1145–1148.

General Notes.

Presas (Anuario del Liceo de Mantanzas, i. pp. 239–246) publishes a general account of the structure, habits, &c. of the Lepidoptera, especially with reference to those of Cuba.

Prittwitz (Stett. ent. Zeit. 1867, p. 275), in describing a new *Callimorpha*, makes some remarks on the affinities of the different members of the group Nocturni.

Prittwitz also remarks (*l. c.* pp. 275–277) upon the fondness displayed by certain moths (e. g. *Acontia solaris* and *Arctia villica*) for the vicinity of human habitations.

Frauenfeld (Verh. zool.-bot. Ges. in Wien, xvii. pp. 431–432 & 446–449) notices the species of Lepidoptera collected on board the 'Novara' during her voyage. The number of species recorded is 42. The most numerously represented groups are the Geometridæ, Pyralidæ, and Tineidæ; and the author suggests that the predominance of these is due to their possessing less power of flight than the Noctuidæ and Sphingidæ, the latter having less occasion to rest upon the ship, and being able to escape from it more easily, on account of their greater power of wing. A large flight of *Papilio hector* visited the 'Novara' at some distance from Ceylon.

A. S. Packard publishes (Proc. Bost. Soc. N. H. xi. pp. 62–63) a list of the Lepidoptera collected in Labrador, with remarks on many of the known species and descriptions of numerous new ones. He remarks that the Lepidopterous fauna of the coast is of an Arctic character, agreeing closely with that of Greenland, whilst in the interior of the country, which is warmer, the fauna acquires a large intermixture of boreal or Canadian forms.

A catalogue of Eversmann's collection of Lepidoptera lately presented to the Entomological Society of Russia by the Princess Helena Paulowna is published by the Society with the Horæ Soc. Ent. Ross. tom. v.

J. C. Sievers, jun., publishes (Horæ Soc. Ent. Ross. iv. pp. 49–77) a catalogue of the Lepidoptera of the Government of St. Petersburg arranged upon the model of the general catalogue of Staudinger and Wocke. The total number of species cited by him is 1274, namely, of Rhopalocera 97, of Sphinges, Bombyces, and Noctuæ 373, of Geometræ 216, and of Microlepidoptera 586.

Sievers adds 30 newly captured species (Bombyces and Noctuæ 4, Geo-

metræ 2, Microlepidoptera 24) to his list in a supplementary note. Horæ Soc. Ent. Ross. v. pp. 3–5.

Ström has commenced (Naturh. Tidsskr. 3rd ser. vol. iv.) a synopsis of the Danish Lepidoptera. The first portion (*l. c.* pp. 109–140) contains the Rhopalocera and the Sesiidæ, Sphingidæ, and Zygænidæ; a second part (*l. c.* pp. 381–414) the Bombycina. The Heterocera are divided by Ström into the three groups *Closterocera* (Dum.), *Nematocera* (Dum.), and *Microlepidoptera*,—the first group containing the 3 families above-mentioned, and the second the remainder of the larger Lepidoptera.

Maurissen has published (Tijdschr. v. Entom. 2de ser. i. pp. 169–188) a list of the species of Macrolepidoptera found in the Duchy of Limbourg, with notes on comparative rarity, mode and time of occurrence, &c. The list includes 442 species.

J. Pfützner has published a Catalogue of the Lepidoptera of the neighbourhood of Berlin to the end of the Geometridæ. Berl. ent. Zeitschr. 1867, pp. 195–208.

Mann has published a list of the species of Lepidoptera collected by him in South Tyrol from May to July 1867 (Verh. zool.-bot. Ges. in Wien, xvii. pp. 829–841), followed by descriptions of a few new species (*l. c.* pp. 841–844).

F. Buchanan White publishes a list of Lepidoptera collected by him in Switzerland and Italy in 1866. Ent. M. Mag. iv. pp. 57–60.

G. Allard has published (Ann. Soc. Ent. Fr. 4e sér. vii. pp. 311–322) a list of Lepidoptera collected by him in Algeria, with notes on the localities in which they occur and on the habits of some of the species, and descriptions of several new species.

P. Mabille publishes a series of notes upon the Lepidoptera of Corsica (Ann. Soc. Ent. Fr. 4e sér. vi. pp. 545–564, & vii. pp. 635–638). In his first notice he gives an account of an ascent of the Monte Rotondo (*l. c.* pp. 547–551), with notes on the Lepidoptera observed, and a list of Lepidoptera observed in the beginning of August 1866 in the neighbourhood of Corte (*l. c.* pp. 551–556), followed by remarks on the known species and descriptions of some new species. His second notice contains additional notes on the Lepidoptera of Monte Rotondo (*l. c.* p. 636), on those of Monte Renoso (*l. c.* pp. 637–639), on the species collected at Bastia and elsewhere on the coasts (*l. c.* pp. 639–642), and a monographic revision of the *Eupitheciæ* of Corsica (*l. c.* pp. 642–658). Many remarks on the synonymy and food-plants of the species are scattered through the various articles; and the more important of these will be noticed hereafter.

Hinterwaldner has published (Zeitschr. des Ferdinand. 3te Folge, xiii. pp. 211–254) a list of the Macrolepidoptera of the Tyrol, in which the geographical distribution of the species, especially with regard to the altitude at which they occur, and their comparative rarity in the different regions are indicated by means of letters and numbers. In the introductory remarks (pp. 211–222) the author discusses the physical characteristics of the country and their influence upon the diffusion of Lepidoptera, and notices several points of general interest to the entomologist. The total number of species recorded is 904, or, including 13 doubtful species, 917; of these, 63 occur exclusively

in North Tyrol, and 406 in South Tyrol, the remainder being common to the two divisions of the country admitted by the author. From a table showing the number of species occurring at different elevations, the gradual diminution in this respect with increased altitude is very strikingly seen. In Region I. (up to 3000 feet) we have 765 species, in II. (3000–4300 feet) 557 species, in III. (4300-6000 feet) 290, in IV. (6000–7000 feet) 126, and in V. (7000–8000 feet, or the lower snow-region) only 50 species.

F. Moore has continued his catalogue of the Lepidoptera of Bengal (Proc. Zool. Soc. 1867, pp. 44–98 and 612–686). The total number of species contained in his list, chiefly derived from the collections of Messrs. Russell & Atkinson, is 1616, distributed as follows into main groups:—

Papiliones	109
Sphinges	50
Bombyces	387
Noctues	288
Pseudo-deltoides	27
Deltoides	34
Pyrales	73
Geometres	288
Crambices	18
Tortrices	7
Tineines	35

F. J. Atkinson publishes lists of captures at Simla and Jaunpore in May and July 1866. Ent. M. Mag. iv. p. 60.

Herrich-Schäffer (Corr.-Blatt zool.-min. Ver. Regensb. xx. p. 89) notices some Lepidoptera collected in the Fiji Islands and in Queensland.

Birchall publishes a supplement to his list of Irish Lepidoptera. It includes 4 species, namely, *Apamea fibrosa*, *Ennomos tiliasia*, *Emmychia anguinalis*, and *Ephippiphora tetragonaria*. Ent. M. Mag. iii. p. 202.

Additions to Birchall's list of Irish Lepidoptera. Ent. M. Mag. iv. pp. 70-91.

Birchall (Entomologist, iii. pp. 191–193) remarks upon some species omitted from his list of Irish Lepidoptera.

Birchall notices various localities in Ireland and the Lepidoptera occurring in them. Entomologist, iii. pp. 205–209, 235–238, 250–255.

Lists of captures of Lepidoptera in various districts of Britain are published by E. H. Todd on the Cotswolds (Ent. M. Mag. iii. pp. 183 & 210), A. Edmunds in Worcestershire (*l. c.* p. 184, and iv. p. 159), A. E. Hudd near Bristol, on Ivy (*l. c.* p. 186), by H. D'Orville on the Cotswolds (*l. c.* p. 187), by E. N. Bloomfield near Hastings (*l. c.* p. 206), by C. G. Barrett at Haslemere, *Microlepidoptera* (*l. c.* p. 209, and iv. p. 160), by J. Ingram in the Isle of Wight (*l. c.* p. 213), by Carrington near York, on sallows (*l. c.* p. 236), by Blackburn in the Isle of Wight (*l. c.* p. 262), by Llewelyn in South Wales

(*l. c.* p. 263, and iv. p. 16), by J. B. Hodgkinson at Witherslack (Ent. M. Mag. iv. pp. 98, 137, & 154), by Blackburn at West Wickham (*l. c.* p. 41), by Blackburn at Rannoch (*l. c.* pp. 138–139), by J. Sang, *Microlepidoptera*, at Darlington (*l. c.* p. 153), and by W. H. Harwood near Colchester (*l. c.* p. 162).

M'Lachlan, after noticing the variations of *Sterrha sacraria*, discusses the phenomena of variation in the Lepidoptera in general (Trans. Ent. Soc. 3rd ser. ii. pp. 458–468). He indicates that Britain is remarkable for the number of its varieties of Lepidoptera, and points out a considerable number of cases in which the variation of the species seems to be in accordance with fixed and general rules. Thus numerous species (many of which are cited *l. c.* p. 459) become darker or "melanised" in the north of England and in Scotland; and the country about Warrington especially seems to be peculiarly favourable to the production of dark varieties, so that, as M'Lachlan remarks, it is "not difficult to imagine that, should this district suddenly become isolated, these forms would of necessity develop into what we should very fairly call species." These and other examples are employed by M'Lachlan in support of a limited Darwinism. He thinks "that ordinarily varieties have a tendency to revert to what we consider as the type, but that, under certain circumstances, not only will they not so revert, but that the divergence will gradually become wider, until eventually they develop into what is considered as a species." With regard to the variation of larvæ, which M'Lachlan considers to have little to do with that of the imago, he publishes a long and elaborate tabular statement from the observations of Hellins and Buckler, in which the food-plants and the variations of the insects in the larval and perfect states are clearly indicated. From this it would appear that larval variation is more common and extensive in those species which feed upon various plants, although these very insects are exceedingly constant in the imago-state; and M'Lachlan is inclined to regard the variation of the larvæ, especially in those forms (such as many *Eupitheciæ* and other Geometridæ) which feed on flowers, or at all events during the day, as an instance of mimicry destined to screen them from the attacks of birds. In the case of *Eupithecia absinthiata* he has noticed the variation in the colour of the larvæ as being distinctly in accordance with that of the different kinds of flowers on which they were feeding. M'Lachlan also refers to other peculiarities displayed by species of Lepidoptera in different British localities, especially to the fact that many species which produce two broods annually in the south, have only one brood in Scotland, and to the circumstance that in the latter country some species remain for two or three years in the pupa-state.

The portion of M'Lachlan's paper just noticed has been translated into French by Girard and Fallou, who also append some rather voluminous notes to it (Ann. Soc. Ent. Fr. 4ᵉ sér.

vii. pp. 323–350). The greater part of these notes are really objections urged against the Darwinian hypothesis, and relate both to Lepidoptera and to insects of other orders.

Notes by J. Greene & Knaggs on variation in Lepidoptera. Ent. M. Mag. iii. pp. 236–239. Also by Jordan (*l. c.* pp. 251–252), C. S. Gregson (*l. c.* pp. 252–253), and J. Greene (*l. c.* pp. 253–256), with a reply to the latter by Knaggs (*l. c.* p. 256). See also J. A. Forster on the variation in size of bred specimens (*l. c.* p. 278).

On variation in Lepidoptera, by Hodgkinson (Ent. M. Mag. iv. p. 40) and Knaggs (*l. c.* p. 41).

G. S. Saunders notices a nest formed by social caterpillars among the leaves of a Brazilian *Zeyhera*. Proc. Ent. Soc. 1867, p. lxx.

Goossens (Bull. Soc. Ent. Fr. 1867, p. iv) refers to the occurrence of external sexual characters in the caterpillars of Lepidoptera.

Landois's observations on the eyes of caterpillars are noticed by Claparède in the Bibliothèque Universelle, Nov. 1866, Bull. Sci. pp. 272–275, translated in Ann. & Mag. N. H. 3rd ser. xix. pp. 61–63.

Steudel has published (Würt. naturw. Jahreshefte, xxii. pp. 243–252) some instructions in killing and setting the Microlepidoptera.

Fallou notices the application of an apparatus for finely dividing water in the rearing of caterpillars, instancing particularly his successful treatment of larvæ of *Chelonia quenselii*. Guérin also remarks on the advantage of applying moisture in the rearing of caterpillars; he has employed it with success on those of *Papilio alexanor*, *Bombyx cynthia*, &c. Bull. Soc. Ent. Fr. 1866, pp. lv-lvii.

Rhopalocera.

Grandidier (Rev. et Mag. de Zool. 1867, p. 275) gives a list of species detected by him in the southern part of Madagascar and not previously recorded as inhabiting that island:—*Papilio antenor* (Drury), *Anthocharis flavida* (Boisd.), *æna* (Boisd.), *ephya* (Kl.), *evarne* (Kl.), *Idmais dynamene* (Kl.), and *Terias senegalensis* (Boisd.).

W. H. Herbert records (Entomologist, iii. p. 226) the visit of numerous birds and butterflies during a cyclone to a ship 600 miles from the African coast, and 200 from the Cape Verde Islands. The butterflies are said by Newman to be *Diadema bolina* and *Pyrameis cardui*.

Weir remarks that the metallic chrysalids of Butterflies are generally free from the attacks of birds. Proc. Ent. Soc. 1867, p. ci.

T. W. Wood notices the variation in the colours of the chrysalids of Butterflies, which he considers to be due to assimilation to the surrounding objects. Proc. Ent. Soc. 1867, pp. xcix–ci. These views are confirmed by Butler and opposed by Bates, *l. c.* p. ci.

Giraud notices (Bull. Soc. Ent. Fr. 1867, p. lxvi) examples of *Pyrameis atalanta* and *Satyrus mæra* which present different-sized wings on the two sides. Laboulbène and Goossens mention their having seen similar cases (*l. c.* p. lxvii).

Gregson publishes a series of notes on variation in the Lepidoptera, in which he describes varieties of numerous species of Rhopalocera. Entomologist, iii. pp. 209–213, and 263–267.

general statement, and at the same time remarks that as so great a proportion of the Coleoptera live, either in the larva or perfect state, in the wood or beneath the bark of trees, the exceptional distribution of the insects of this order in the eastern islands may be accounted for by their transportation from island to island in floating timber &c. In the case of Lepidoptera, this cause of diffusion of species can hardly exist; and although these insects are liable to be carried to great distances by storms and by the monsoons, their chance of establishing themselves in new islands is greatly limited, among other things, by the necessity which so many of them labour under of finding the proper food-plant of their larvæ in their new home. In illustration of this view, Wallace here investigates in detail the *Pierides* of the combined Indian and Australian regions, paying particular attention to the geographical range of the species, which is well represented in a series of tables occupying pp. 402–415. From the author's statements it appears that not only species, but genera and sections of genera are characteristic of the islands on one side or the other of his line of demarcation above referred to; and the facts in general are considered by him to confirm his view that the islands situated to the east of this line belong to the Australian, and not to the Indian region. Wallace further discusses the distribution of the species and the number of peculiar species in the different islands and groups of islands, and remarks that (as also in the case of the true *Papilionides*) Celebes presents a great amount of peculiarity. The *Pierides* of Celebes likewise present a peculiar subfalcate form of the anterior wings. Examples of mimicry are not numerous or striking among the eastern *Pierides*; but Wallace refers to some examples of this phenomenon presented by them (pp. 309–311).

Wallace discusses the generic characters presented by the *Pierides* (pp. 312–314). He adopts the genus *Thyca* (Wallengr.) to which he refers 57 species, and gives the following table (p. 314) showing the distinctive characters of that genus, and of 2 new genera which he has established at the expense of the genus *Pieris* of authors:—

A. One branch of subcostal before end of cell.... THYCA (Wallengr.)
AA. Two branches of subcostal before end of cell.
B. Males with tufts of hairs or bristles at anal valves. TACHYRIS, g. n.
BB. Males with anal valves bare.
C. Males with costa serrated..... PRIONERIS, g. n.
CC. Males with costa smooth..... PIERIS.

The following specific synonyms are indicated by Wallace (and others will be found in the list of species belonging to his new genera):—*Pieris pallene* (Hew.)=*Elodina angulipennis* (Luc.); *Terias zama* (Feld.)=♀ *T. zita* (Feld.); *T. tondana* (Feld.)=*tominia* (Voll.); *Pieris wallaceana* (Feld.)=♀ *rachel*

(Boisd.); *P. perithea* (Feld.) = *nabis* (Luc.); *P. descombesii* (Voll.) = *Thyca zebrida* (Hew.); *P. lorquinii* (Feld.) = *Thyca rosenbergii* (Voll.); *Eronia gœa* (Feld.) = *hippia* (Fab.); *Iphias felderi* (Voll.) = *sulphurea* (Wall.); and *Gonepteryx urania* (Butl.) = *Dercas wallichii* (Doubl.). *Pieris* (*Tachyris*) *celestina* (Boisd.) is figured, *l. c.* pl. 8. fig. 6, and *P.* (*T.*) *athama* (Luc.), pl. 9. fig. 1.

Prittwitz (Stett. ent. Zeit. 1867, pp. 266–269) remarks upon *Terias zoë* (Hopffer) and the confusion existing between it and the allied forms *T. drona*, *brigitta*, *pulchella*, and *rahel*, on the geographical distribution of *Colias edusa*, on the variation of *Colias cæsonia*, and on *Pieris monuste* (Hübn.).

Leuconea crategioides (Lucas) = *Pieris hippia* (Brem.), according to Ballion, Stett. ent. Zeit. 1867, p. 340.

Lucas also notices the identity of his *Leuconea crataegioides* with *Pieris hippia* (Brem.). Bull. Soc. Ent. Fr. 1867, p. v.

G. Allard notices the occurrence of ten species of this subfamily in Algeria (Ann. Soc. Ent. Fr. 4e ser. vii. pp. 312–313) and remarks specially upon the habits of *Anthocharis glauce*, *belemia*, and *levaillantii*.

Anthocharis levaillantii. Lucas publishes some rectificatory notes on his account of this species. Bull. Soc. Ent. Fr. 1867, p. xxiii.

Stainton (Brit. Butt. & Moths, pl. 1) figures *Colias edusa*, fig. 1, and *Anthocharis cardamines*, fig. 2.

Anthocharis bellezina (Boisd.). Millière figures and describes what he regards as a variety of this species (Ann. Soc. Linn. Lyon, xiv. p. 297, pl. 71. fig. 1).

Eronia cleodora (Hübn.) is figured and described by Hewitson, Exot. Butt. 63, June 1867, *Callid.* & *Eronia*, fig. 7.

On the mimicry of *Leptalis theonoë* and *orise* see Bates, Trans. Ent. Soc. 3rd ser. v. p. 536.

On the variation in colour of *Anthocharis cardamines* and allied species, Kirby, Ent. M. Mag. iv. p. 90.

Hellins describes the life-history of *Leucophasia sinapis* (Steph.), Ent. M. Mag. iii. pp. 210, 211; and Buckler the larva of *Colias edusa* (Fab.), Ent. M. Mag. iv. pp. 117–119.

G. Semper notices the colouring and habits of the larva of *Callidryas pyranthe* (Linn.). Verh. zool.-bot. Ges. in Wien, xvii. p. 698.

Colias edusa seen depositing eggs in the middle of August, by J. Ingram. Ent. M. Mag. iv. p. 90. Larva described by Newman, Entomol. iii. p. 339.

According to Frauenfeld (Verh. zool.-bot. Ges. in Wien, xvii. p. 787) *Pontia brassicæ* occurred in unusual and injurious numbers about Vienna in 1867.

New genera and species :—

Heurema, g. n., Herrich-Schäffer, *l. c.* p. 105. Allied to *Leucophasia*; fore wings with 11 veins; branch 9 springing from 6 far from its origin. Sp. *Terias impura* (Voll.).

Leucidia, g. n., Herrich-Schäffer, *l. c.* p. 105. Allied to the preceding; branch 9 springing from the same point as 6. Sp. *L. elphos* (Feld.) and *buphos* (H.-Sch. MS.).

Perente, g. n., Herrich-Schäffer, *l. c.* p. 105. Allied to *Euterpe*; vein 9 entirely wanting; both transverse veins nearly straight; P C distinct, inclined towards base. Sp. *E. callinice* (Feld.), *marina* (Doubl.), *charops* and *autodyce* (Boisd.), *telthusa* (Hew.), and *leucodrosyne* (Koll.).

Midea, g. n., Herrich-Schäffer, *l. c.* p. 105. Allied to *Callosune*; P C vertical, vein 9 springing from 6 or from the same point. Sp. *P. genutia* (Fab.).

Phulia, g. n., Herrich-Schäffer, *l. c.* p. 105. Allied to *Anthocharis*; vein 8 wanting; veins 9 and 10 from the anterior vein of the median cell; and 5 from same point as 6+7 from its anterior right-angled corner; upper transverse vein wanting; P C curved towards base. Sp. *P. nymphella* (Gay).

Tachyris, g. n., Wallace, Trans. Ent. Soc. 3rd ser. iv. p. 361 (see p. 350). Figures showing anal valves of male in 2 species and in 2 species of *Pieris*, p. 362, figs. 1–4. Known sp. *P. hombronii* (Luc.), *cardena* (Hew.)=*hagar* (Voll.), *nerissa* (Fab.)=*zelmira* (Cram.), *lynceola* (Feld.), *lyncida* (Cram.) =*envo* (Boisd.) = *hippo*, var. (Voll.), *lycaste* (Feld.), *formosana* (Wall.), *andrea* (Esch.), *hippo* (Cram.)=*phryne* (Fab.)=*eleonora* (Boisd.), *enarete* (Boisd.), *scyllaria* (M'L.), *ada* (Cram.) = *cilla* (Feld.), *panda* (God.)=*sulphurea* (Voll.), *nathalia* (Feld.), *paulina* (Cram.)=*leis* (Hübn.)=*neombo* and *albina* (Boisd.)=*galene* and *darada* (Feld.), *rouxii* (Boisd.), *psyche* (Feld.), *galathea* (Feld.), *ega* (Boisd.) + ♀ *melania* (Boisd.), *jacquinotii* (Luc.)=*zoe* (Voll.)=*agave* (Feld.), *acrisa* (Boisd.), *leptis* (Feld.)=*paulina* (Boisd. nec Cram.), *celestina* (Boisd.), *clementina* (Feld.), *athama* (Luc.), *eumelis* (Boisd.), *cycinna* (Hew.)+*ocina* (Hew.), *liberia* (Cram.), *eliada* (Hew.)=*liberia* (Voll. nec Cram.), *placidia* (Stoll), *fatima* (Voll.), *nero* (Fab.)=*thyria* (Horsf.), *domitia* (Feld.), *zarinda* (Boisd.), *zamboanga* (Feld.), *asterope* (Feld.), *ithome* (Feld.), *nephele* (Hew.), *pandione* (Hübn.), *indra* (Moore), *phœbe* (Feld.), *zamora* (Feld.), *lalage* (Doubl.)=*durvasa* (Moore), *polisma* (Hew.), and *illana* (Feld.)=*ægis* (Feld.). New sp. *Tachyris clavis*, Wall. *l. c.* p. 367, Ké Island; *T. abnormis*, Wall. *l. c.* p. 368, pl. 8. fig. 5, New Guinea; *T. urania*, Wall. *l. c.* p. 371, Tondano; *T. amarella*, Wall. *l. c.* p. 373, pl. 9. fig. 2, New Caledonia; *T. cynisca*, Wall. *l. c.* p. 375, Bouru; *T. panthea*, Wall. *l. c.* p. 376, Philippine Islands; *T. corinna*, Wall. *l. c.* p. 377, Waigiou; *T. galba*, Wall. *l. c.* p. 378, North India; and *T. bouruensis*, Wall. *l. c.* p. 379, Bouru. Wallace also gives the name of *T. alope* to *P. amasene* (Boisd. nec Cram.), *l. c.* p. 372, and that of *T. lucasii* to *P. pandione* (Boisd. nec Hübn.), *l. c.* p. 381.

Prioneris, g. n., Wallace, *l. c.* p. 383 (see p. 350). Known sp. *P. thestylis* (Doubl.), *seta* (Moore), *sita* (Feld.), *clemanthe* (Doubl.)=*helferi* (Feld.), *berenice* (Luc.), *cornelia* (Voll.), *philonome* (Boisd.), and *autothisbe* (Hübn.). *Prioneris vollenhovii*, sp. n., Wallace, *l. c.* p. 386, pl. 9. fig. 3, Borneo, Sarawak.

Leptalis othoë, Hewitson, Ent. Trans. 3rd ser. v. p. 562, New Granada; *L. ithomia* Hew. ibid., Ecuador; and *L. avonia*, Hew. *l. c.* p. 563, Quito.

Pontia dione, Wallace, Trans. Ent. Soc. 3rd ser. iv. p. 317, Macassar.

Elodina bouruensis, Wallace, *l. c.* p. 319, Bouru; *E. signata*, Wallace, ibid., New Caledonia.

Terias. Wallace (*l. c.*) describes the following new species of this genus:—*T. australis*, p. 321, Moreton Bay; *T. ingana*, p. 322, Sidney; *T. sinta*, ibid., Moreton Bay; *T. rubella*, p. 323, Calcutta, Darjeeling, China; *T. fimbriata*, ibid., Mussooree; *T. silhetana*, p. 324, Silhet; *T. diversa*, ibid., New Guinea &c., Philippine Islands; *T. celebensis*, p. 327, pl. 6. fig. 1, Macassar, Menado, &c.; and *T. virgo*, p. 328, Aru Islands.

Pieris. Wallace (*l. c.*) describes the following new species:—*P. mentes* p. 332, Lombock, Flores; *P. narses*, p. 333, pl. 6. fig. 3, Moreton Bay; *P. jael*, p. 335, New Guinea &c.; *P. naemi*, p. 336, Lombock, Flores; *P. tamar*,

p. 337, pl. 6. fig. 2, Baly; *P. corva*, p. 339 (=var. *coronis*, Boisd.), Java, Baly; *P. copia*, p. 340, Bengal; *P. amba*, ibid., North India.

Pieris cinerea, Hewitson, Ent. Trans. 3rd ser. v. p. 563, Ecuador.

Pieris figulina, Butler, Ann. Mag. N. H. 3rd ser. xx. p. 399, pl. 8. fig. 1, Singapore and Borneo.

Thyca. Wallace (*l. c.*) describes the following new species of this genus:—*T. pandemia*, p. 346, pl. 6. fig. 4, Borneo; *T. parthenope*, p. 347, pl. 6. fig. 5, Singapore; *T. ninus*, ibid., pl. 7. fig. 1, Malacca; *T. singhapura*, p. 353, pl. 7. fig. 2, Singapore; *T. ennia*, p. 355, pl. 7. fig. 4, Waigiou; *T. philotis*, p. 357, pl. 8. fig. 4, Bouru; *T. echo*, p. 358, pl. 8. fig. 3, Bouru; *T. hippodamia*, p. 359, pl. 8. fig. 1, Aru Islands; and *T. orphne*, p. 361, pl. 8. fig. 2, Malacca. Wallace also gives the name of *Thyca pyramus* to *Pieris thisbe* (Gray nec Cram.), *l. c.* p. 347.

Idmais fulvia, Wallace, *l. c.* p. 392, pl. 9. fig. 5, South India.

Thestias venatrix, Wallace, *l. c.* p. 393, Moulmein; *T. pirenassa*, Wall. *l. c.* p. 395, pl. 9. fig. 4 (=*œnippe*, Boisd. nec Cram.), India.

Iphias borneensis, Wallace, *l. c.* p. 396 (=*glaucippe*, var., Wall. olim).

Anthocharis fallaui, G. Allard, Ann. Soc. Ent. Fr. 4e sér. vii. p. 318, pl. 6. fig. 1, Algeria.—*Anthocharis zoë*, Grandidier, Rev. et Mag. de Zool. 1867, p. 272, Madagascar.

Callidryas lucasi, Grandidier, *l. c.* p. 273, Madagascar.

Callidryas fiaduna, Hewitson, Exot. Butt. 63, June 1867, *Callid.* and *Eronia*, figs. 1–4, Madagascar; and *C. etesia*, Hew. *l. c.* figs. 5, 6, Queensland.

Eronia erxia, Hewitson, *l. c.* = *E. cleodora* (Doubld. & Hew. nec Hübner).

Colias behrii, Edwards, Proc. Ent. Soc. Phil. vi. p. 201, Yo Semite Mountains.

Euchloë coliagenes, Butler, Ann. Mag. N. H. 3rd ser. xx. p. 216, pl. 4. figs. 4 & 5, White Nile.

Danaides.

Butler (Trans. Ent. Soc. 3rd ser. v. pp. 472–484) publishes a tabular list of the described species of this group, giving the names of the species and of the authors who originally described them, the dates of the descriptions, the publications in which they appeared, and the localities from which the species have been received. He has experienced some little difficulty in determining the identity or non-identity of the species described nearly simultaneously by C. & R. Felder and by himself, as will be seen from the following general statement of his results. Of the genus *Euplœa*, he records 122 species, including 18 of Felder's species, which he thinks are probably distinct. Of the other species described by Felder, 12 are referred with doubt, and 27 with more certainty, to previously described species; among the latter *E. novaræ* and *E. ledereri* occur, although they are included as distinct species in the general list. Of *Danais*, Butler records 73 species, and 5 of those described by Felder, as synonyms of other species; *Hestia* includes 11 species.

G. Semper publishes notes on the larvæ of *Danais juventa* (Cram.), *D. chrysippus* (Linn.), and *Euplœa dufresnii* (God.). Semper notices that *E.*

megilla (Erichs.) is the ♀ of the last-named species; the ♀ figured by Godart is distinct and =*E. lætifica* (Butl.).

Euplœa eunice. On the synonymy of this species see Prittwitz, Stett. ent. Zeit. 1867, pp. 270–271.

Euplœa superba, sp. n., Vollenhoven, Tijdschr. v. Ent. 2de ser. i. p. 209, pl. 10. fig. 1, Celebes.

Hestia clara, sp. n., Butler, Trans. Ent. Soc. 3rd ser. v. p. 469, Java?

Heliconiides.

Bates (Trans. Ent. Soc. 3rd ser. v. pp. 536–539) notices some points in the variation and distribution of species of *Heliconius* collected in Maranham by T. Belt. The forms referred to are *H. erato* and *doris*, now proved to belong to one species, and *H. melpomene* and *thelxiope*, with intermediate varieties.

C. & R. Felder (Reise der Novara, Zool. ii. Lep. Heft 3) figure the following species of this group, of which they published diagnoses in the Wiener ent. Monatsschrift, vi.:—*Athyrtis mechanitis*, pl. 44. fig. 2; *Melinæa idæ* pl. 45. fig. 10; *Ithomia susiana*, pl. 44. figs. 3, 4; *I. agarista*, pl. 44. fig. 10; *I. panthyale*, pl. 45. fig. 2; *Napeogenes curyanassa*, pl. 45. fig. 1; *Ceratinia excelsa*, pl. 44. fig. 13; *Heliconius ithaca*, pl. 47. fig. 3; *H. aerotome*, pl. 47. fig. 6; *H. cassandra*, pl. 47. figs. 3, 4; and *Eueides heliconioides*, pl. 46. fig. 16.

Prittwitz (Stett. ent. Zeit. 1867, p. 269) remarks upon variations in *Mechanitis meternis* (Hew.), *M. mænius* (Hew.), and *Heliconia charitonia* (Boisd.).

New species :—

Thyridia ceto, Felder, *l. c.* p. 353, Bogotá.

Melinæa thera (H.-Sch. MS.), Felder, *l. c.* p. 354, origin unknown; *M. phasis* (H.-Sch. MS.), Feld. ibid., Brazil; *M. tachyptis* (Koll. MS.), Feld. *l. c.* p. 355, Mexico; *M. messenina*, Feld. *l. c.* p. 356, pl. 45. fig. 11, Bogotá.

Callithomia hydra (H.-Sch. MS.), Felder, *l. c.* p. 356, Venezuela.

Ithomia. C. & R. Felder (*l. c.*) describe the following new species of this genus:—*I. hulda* (H.-Sch. MS.), p. 356, Venezuela; *I. euchytma* (Moritz, MS.), p. 357, Venezuela, Bogotá; *I. olyras*, p. 358, pl. 44. figs. 5, 6, Bogotá; *I. marica* (Moritz, MS.), ibid., Venezuela; *I. alpho*, p. 359, Venezuela; *I. dircenna*, p. 360, pl. 45. figs. 3, 4, *I. megalopolis*, ibid., pl. 44. fig. 9, *I. donella*, p. 361, pl. 44. figs. 7, 8, Bogotá; *I. quintina*, ibid., pl. 44. figs. 11, 12, Maracaibo; *I. alinda*, p. 362, Venezuela; *I. hemixanthe* (Koll. MS.), p. 363, pl. 45. fig. 1, South Brazil; *I. eulyra* (Moritz, MS.), ibid., *I. asopo* (Moritz, MS.), ibid., Venezuela; and *I. apia*, p. 364, Bogotá.

Ithomia. Hewitson (Exot. Butt. 62, April 1867, *Ithomia*, pl. 25) describes and figures the following new species:—*I. mutilla*, fig. 153, Demerara; *I. morella*, fig. 154, Venezuela; *I. jessica*, fig. 155, *I. acilla*, fig. 156, *I. fenella*, fig. 159, Minas Geraës; *I. orestilla*, fig. 160, New Granada; and *I. yanetta*, fig. 158, origin not stated (fig. 157 is omitted in plate).

Hymenitis libethris, Felder, *l. c.* p. 365, pl. 45. fig. 8, Bogotá.

Napeogenes cranto, Felder, *l. c.* p. 365, pl. 45. figs. 6 & 7, Bogotá.

Oleria philemon (H.-Sch. MS.), Felder, *l. c.* p. 367, Venezuela?; *O. leptalina*, Feld. ibid. pl. 45. fig. 5, Brazil.

Mechanitis numerianus, Felder, *l. c.* p. 368, pl. 45. fig. 9, Bogotá.

Heliconia. Hewitson (Exot. Butt. 63, June 1867, *Helic.* pl. 5) figures and

describes the following new species:—*H. hippola*, fig. 13, origin not stated; *H. hydara*, fig. 14, New Granada; *H. hygiana*, fig. 15, Quito; and *H. himera*, fig. 16, Ecuador.

Heliconia timareta, Hewitson, Trans. Ent. Soc. 3rd ser. v. p. 563, Ecuador.

Heliconius novatus, Bates, Trans. Ent. Soc. 3rd ser. v. p. 539, and *H. paraplesius*, Bates, *l. c.* p. 540, Maranham and Pará.

Heliconius. C. & R. Felder (*l. c.*) describe the following new species of this genus:—*H. cephallenia*, p. 373, Surinam; *H. polychrous* (Koll. MS.), p. 375, pl. 47. fig. 7, Brazil; *H. natterері*, ibid., pl. 47. fig. 8, Brazil; *H. melete*, p. 376, and *H. lindigii*, p. 377, pl. 47. fig. 1, Bogotá.

Eueides xenophanes, Felder, *l. c.* p. 377, pl. 46. figs. 14 & 15, Bogotá.

Acræides.

C. & R. Felder (Reise der Novara, Zool. ii. Lep. Heft 3) figure the following species:—*Acræa cresia*, pl. 46. figs. 4, 5; *A. callianthe*, pl. 46. figs. 6, 7; *A. trinacria*, pl. 46. figs. 2, 3; and *A. erinome*, pl. 46. fig. 1.

Acræa euryta (Linn.). Hewitson (Exot. Butt. 64, Oct. 1867, *Acræa*, pls. 4 & 5. figs. 21–32) figures 12 forms which he regards as varieties of this species, 8 of the ♂ and 4 of the ♀. *A. vestalis* and *alcinoë* (Feld.) are 2 other varieties of the ♂.

Acræa. C. & R. Felder (*l. c.*) describe the following new species of this genus:—*A. alcinoë*, p. 368, pl. 46. figs. 12 & 13, Island of Bissao; *A. vestalis*, p. 369, pl. 46. figs. 8 & 9, Guinea; *A. caffra*, ibid., pl. 46. figs. 10 & 11, Caffraria; and *A. safie*, p. 370, Abyssinia.

Nymphalides.

C. & R. Felder (Reise der Novara, Zool. ii. Lep. Heft 3) figure the following species of this group, of which they published diagnoses in the Wiener ent. Monatschrift, vi.:—*Cethosia nicobarica*, pl. 48. figs. 7, 8; *Cirrochroa orissa*, pl. 49, figs. 7, 8; *C. fasciata*, pl. 49. figs. 9, 10; *Argynnis diana* (Cram.), pl. 50. figs. 3, 4; *A. nerippe*, pl. 50. figs. 1, 2; *Melitæa leanira*, pl. 50. figs. 13, 14; *Eresia leucodesma*, pl. 50. figs. 11, 12; *E. castilla*, pl. 50. figs. 7–10; *Faunia olympias*, pl. 52. figs. 1, 2; *F. araucana*, pl. 52. figs. 9, 10; *Myscelia leucocyana*, pl. 53. figs. 8, 9; *Batesia hypochlora*, pl. 53. figs. 1, 2; *Catagramma agina*, pl. 53. figs. 12, 13; *Cyane depuiseti*, pl. 53. figs. 3, 4; *Cyrestis paulinus*, pl. 51. figs. 7, 8; *Zethera aganippe*, pl. 54. fig. 3; *Z. musa*, pl. 54. figs. 6, 7; *Z. hestioides*, pl. 54. figs. 4, 5; *Isodema adelma*, pl. 54. figs. 1, 2; *Heterochroa malea*, pl. 57. fig. 7; *H. justina*, pl. 57. figs. 10, 11; *Neptis epira*, pl. 56. figs. 9, 10; *N. ebusa*, pl. 56. figs. 7, 8; *Athyma urvasi*, pl. 56. fig. 4; *A. jocaste*, pl. 56. figs. 1–3; *Adolias ninus*, pl. 58. figs. 4, 5; *A. panopus*, pl. 58. figs. 2, 3; *Apatura rhea*, pl. 57. fig. 3; *A. griseldis*, pl. 57. fig. 1; *Nymphalis chæronea*, pl. 60. fig. 1; *Siderone thebais*, pl. 60. figs. 6, 7; *Eurytela castelnaui*, pl. 61. figs. 5, 6; *Ergolis tæniata*, pl. 61. figs. 1, 2; *Melanitis melias*, pl. 61. fig. 11; and *M. egialina*, pl. 61. figs. 7, 8.

Melitæa. Von Ziegler und Klipphausen have given a tabular synopsis of the European species of this genus, taking Staudinger's Catalogue of 1861 as the foundation of his work. He accompanies it with a series of remarks on the species (Stett. ent. Zeit. 1867, pp. 418–428). He regards *M. latonigena* (Eversm.) as a distinct species; *M. caucasica* (H.-Sch.) is probably distinct from *didyma*; *M. aurinia* (Rottenburg) is substituted for *artemis* on the

ground of one year's priority; *M. hetica* (Ramb.) differs in certain characters from *M. artemis*, var. *desfontainesi*, to which it is referred by Staudinger; *M. deione* (Hübn.) is probably a local variety of *athalia*; *M. corythalia* (Hübn.) = *M. dictynna* (Esp.); *M. aphœa* (Freyer) is probably a var. of *athalia* and not of *britomartis*. The author also discusses the distinctive characters of *M. athalia*, *aurelia*, and *parthenie*.

Melitœa parthenie (Borkh.). Speyer (Stett. ent. Zeit. 1867, pp. 65–71) discusses the characters of this species, which has been identified with *M. aurelia* (Nick.). From Borkhausen's description Speyer shows that *M. parthenie* is identical with *parthenoides* (Keferst.) and also = *parthenie* of Meyer-Dür and probably of Ochsenheimer. *M. deione* (Hübn.) is probably a southern form of the same species. Specimens of his *M. aphœa* sent to Speyer by Freyer are typical examples of *parthenie*. The author notices the characters and natural history of other allied forms, and cites their occurrence in favour of the Darwinian theory of the origin of species.

Heterochroa arete (Ménétr.) is figured by Hewitson, Exot. Butt. 62, April 1867, *Heter.* fig. 1, and *H. melona* (Hew.), ibid. fig. 2.

Stainton figures *Vanessa atalanta* (Brit. Butt. & Moths, pl. 2. fig. 1).

Precis hara (Moore). Prittwitz (Stett. ent. Zeit. 1867, p. 272) remarks on the characters of this species.

Adolias cocytus (Fab.). Prittwitz (*l. c.* pp. 272–273) describes ♂ and ♀ of this species.

Argynnis leopardina (Lucas) = *Melitœa? maculata* (Brem.) according to Ballion, Stett. ent. Zeit. 1867, p. 340.

According to Pfützner (Berl. ent. Zeitschr. 1867, p. 208) *Melitœa britomartis* (Assm.) is a var. of *M. parthenie* (Borkh.).

Prittwitz (Stett. ent. Zeit. 1867, pp. 269–270) remarks on the characters of *Melitœa palla* (Boisd.), on variations of *M. phaëton* (Drury) and *Agraulis juno*, and on the occurrence of *Apatura druryi* and *Cethosia phœrusa* on the Chanchomaya.

G. Allard notices *Vanessa cardui*, *Melitœa œtherie* and *didyma*, and *Argynnis pandora* among the Butterflies of Algeria (Ann. Soc. Ent. Fr. 4ᵉ sér. vii. pp. 314–315).

Lucas records the occurrence of *Limenitis sibylla* in Japan. Bull. Soc. Ent. Fr. 1867, p. v.

Pyrameis cardui. Fereday notices the capture of an example of this species in Canterbury province, N. Z.; and Bates remarks on its variation and distribution. The Australian and New-Zealand specimens form a race distinguished by having ocellated spots on the hind wings; the South-American examples supposed to be *P. cardui* belong to a rosy variety of *P. huntera*. Proc. Ent. Soc. 1867, p. lxxxvii.

Barrett notices the copulation of *Vanessa cardui* in spring. Ent. M. Mag. iv. p. 13.

A. Makowsky notices (Verh. naturf. Ver. in Brünn, iv. Sitzungsb. pp. 61–62) the occurrence of an unusual number of larvæ of *Vanessa cardui* in Moravia in June 1865. They attacked a great variety of Syngenesious plants, and also fed on *Dipsacus fullonum*.

Limenitis sibylla. The habits of the larva and pupa noticed by Barrett, Ent. M. Mag. iv. pp. 13 & 35.

The larvæ of the following species are described by Buckler (Ent. M.

Mag. iv.):—*Limenitis sibylla* (Fab.), pp. 33–35, metamorphosis in detail; *Apatura iris* (Linn.), pp. 85–87; and *Argynnis aglaia* (Linn.), pp. 155, 156.

G. Semper indicates the development and figures the larva of *Doleschallia bisaltide* (Cram.). Verh. zool.-bot. Ges. in Wien, xvii. p. 698, pl. 23. fig. 1.

C. F. Dunois figures a variety of *Melitæa didyma* having large black spots on the lower surface of the wings. Arch. Cosmol. 1867, p. 161, pl. 8. fig. 2.

Melitæa parthenoides. Fallou on variation in this species. Bull. Soc. Ent. Fr. 1866, p. lvi.

Girard notices a variety of *Vanessa atalanta*, Ann. Soc. Ent. Fr. 4e sér. vi. pp. 568–570.

Kriechbaumer describes an hermaphrodite of *Erebia medea* (W. V.). Verh. zool.-bot. Ges. in Wien, xvii. p. 809.

W. F. Evans records 2 malformations of *Vanessa atalanta*; in one the left antenna was only half as long as the right, but had the normal number of joints; in the other the wings on one side were considerably larger than on the other. Proc. Ent. Soc. 1865, p. 115.

Argynnis lathonia. Abnormal specimens noticed by Timins, Proc. Ent. Soc. 1867, p. cviii.

Jordan records an instance of *Vanessa atalanta* flying to a light at half-past ten p.m. Ent. M. Mag. iv. p. 140.

Pseudergolis, g. n., Felder, Reise der Novara, Zool. ii. Lep. p. 404. Allied to *Precis*; antennæ long, scarcely ringed beneath, gradually and narrowly clavate; palpi shorter and stouter; discoidal cells thinly closed; third subcostal branch in anterior wings emitted in the middle of the wing. Sp. *P. avesta*, sp. n., Felder, *l. c.* p. 404, Celebes.

New species:—

Cethosia. C. & R. Felder (*l. c.*) describe the following new species of this genus:—*C. bernsteinii* (Voll. MS.), p. 379, Morotai; *C. damasippe*, ibid. (= *cydippe*, var., Feld. olim), *C. cydalima*, p. 380, pl. 48. figs. 1 & 2, Aru Islands; *C. nietneri*, ibid., pl. 48. figs. 5 & 6, Ceylon; *C. picta*, p. 381, Macassar; *C. amboinensis*, p. 382 (*C. insularis*, Feld. olim, ex parte), Amboyna; *C. eurymena* (Boisd. MS.), p. 384 (=*insularis*, Feld., ex parte), Luzon; *C. mœsta*, p. 383, Halmaheira; *C. javana*, p. 384, Java; *C. hypsina*, p. 385, Malacca; and *C. myrina*, p. 386, pl. 48. figs. 3 & 4, Celebes (= *C. æole*, Feld. nec Moore).

Terinos abisares, Felder, *l. c.* p. 386, Celebes.—*Terinos robertsia*, Butler, Ann. & Mag. N. H. 3rd. ser. xx. p. 390, pl. 8. figs. 2–4, Malacca.

Colœnis telesiphe, Hewitson, Ent. Trans. 3rd ser. v. p. 564, Ecuador.

Cirrhochroa. C. & R. Felder (*l. c.*) describe the following new species of this genus:—*C. thule*, p. 387, pl. 49. figs. 1 & 2, Celebes; *C. hætera*, p. 388, origin unknown; *C. semiramis*, ibid., pl. 49. figs. 3 & 4, Celebes; *C. regina*, p. 389, pl. 49. figs. 5 & 6, Aru Islands; and *C. satyrina*, ibid., Celebes.

Messaras myronides, Felder, *l. c.* p. 390, Halmaheira; *M. wallacei*, Felder, ibid., Waigiou; and *M. arias* (Boisd. MS.), Felder, *l. c.* p. 391, Luzon.

Argynnis cnidia, Felder, *l. c.* p. 392, pl. 50. figs. 5 & 6, Himalaya.

Argynnis ruslana, Motschulsky, Bull. Soc. Nat. Mosc. xxxix. 2. p. 117, Amour.

Melitæa amœnula, Felder, *l. c.* p. 392, Himalaya.

Eresia dracæna, Felder, *l. c.* p. 393, *E. jana*, *l. c.* p. 394, and *E. nazaria*, ibid., Bogotá; *E. conferta*, ibid., Bahia.

Synchloë. C. & R. Felder (*l. c.*) describe the following new species of this genus:—*S. paupera*, p. 395, *S. mediatrix*, ibid., and *S. pœcile*, p. 396, Bogotá; and *S. melitæoides*, ibid., Mexico.

Laogona hippalus, Felder, *l. c.* p. 396, pl. 51. figs. 9 & 10, Halmaheira.

Eurema atropos, Felder, *l. c.* p. 397, pl. 51. figs. 5 & 6, Mexico.

Pyrameis abyssinica, Felder, *l. c.* p. 397, Abyssinia.

Junonia. C. & R. Felder (*l. c.*) describe the following new species of this genus:—*J. antigone*, p. 398, Aru; *J. vestina*, ibid., origin unknown; *J. negra*, p. 399, Rio Negro (=*lavinia*, var. *occidentalis*, Feld. olim); *J. zonalis*, ibid., Bogotá, Cuba (=*lavinia*, var. *occidentalis*, Feld. olim); *J. hilaris*, p. 400, Paraguay; *J. incarnata*, ibid., Bogotá; *J. constricta*, ibid., Bogotá; *J. pallens*, p. 401, Venezuela; *J. divaricata*, ibid., Surinam; and *J. infuscata*, ibid., Bahia.

Precis intermedia, Felder, *l. c.* p. 402, India and Eastern Islands; *P. hellanus*, Felder, ibid., Ternate; *P. ibris*, Felder, *l. c.* p. 403, Abyssinia; and *P. milonia*, Felder, ibid., Old Calabar.

Salamis temora, Felder, *l. c.* p. 404, Old Calabar.

Eurhinia elpinice, Felder, *l. c.* p. 404, Java; *E. megalonice*, Felder, ibid., pl. 51. figs. 3 & 4, Celebes; *E. stratonice*, Felder, ibid., Luzon.

Doleschallia australis, Felder, *l. c.* p. 404, pl. 51. figs. 1 & 2, Australia.

Faunia. C. & R. Felder (*l. c.*) describe the following new species of this genus:—*F. persephone*, p. 406, Bogotá; *F. tithonia*, p. 407, pl. 52. figs. 6–8, Bahia; *F. venusia*, ibid., pl. 52. figs. 3–5, Bogotá; and *F. pomona*, ibid., pl. 52. figs. 11 & 12, Bogotá.

Myscelia cyanecula, Felder, *l. c.* p. 408, pl. 53. fig. 5, and *M. cyananthe*, Felder, ibid., pl. 53. figs. 6 & 7, Mexico.

Ageronia epinome (Boisd. MS.), Felder, *l. c.* p. 409, Brazil.

Ectima lirina, Felder, *l. c.* p. 409, Brazil?; and *E. erycinoides*, Felder, ibid., New Granada.

Eubagis pieridoides, Felder, *l. c.* p. 410, Bogotá.

Perisama guérini, Felder, *l. c.* p. 410, pl. 53. figs. 10 & 11, Bogotá.

Pyrrhogyra typhoeus, Felder, *l. c.* p. 411, Bogotá.

Cyrestis strigata, Felder, *l. c.* p. 411, Celebes; *C. formosa*, Feld. *l. c.* p. 412, Andaman Islands; *C. nedymnus*, Feld. *l. c.* p. 413, New Guinea; *C. rudis*, Feld. ibid., Ceram, Amboyna; *C. nivalis*, Feld. *l. c.* p. 414, Malacca.

Diadema polymena, Feld. *l. c.* p. 414, pl. 55. figs. 5 & 6, Aru; *D. tydea*, Feld. *l. c.* p. 415, pl. 55. figs. 1–4, Batchian.

Euripus euploëoides, Feld. *l. c.* p. 415, Malacca; and *E. clytia* (Boisd. MS.), Feld. ibid., pl. 55. fig. 7, Luzon.

Panopæa apaturoides, Feld. *l. c.* p. 416, Madagascar.

Heterochroa. C. & R. Felder (*l. c.*) describe the following new species of this genus:—*H. olbia*, p. 416, Bogotá; *H. æa*, ibid., Brazil; *H. naxia*, p. 417, Bogotá; *H. lennia*, ibid., Mexico; *H. thessalia*, ibid. (=*ephesa*, Feld. olim), North Brazil; *H. ixia* (Moritz, MS.), p. 418, Venezuela; *H. messana*, ibid., Bogotá; *H. himera*, ibid., Venezuela; *H. æolia*, p. 419, *H. colada*, p. 420, *H. heraclea*, p. 421, *H. attica*, ibid., and *H. bœotia*, p. 422, Bogotá; *H. thesprotia*, p. 419, Surinam, Bogotá; *H. æthalia*, ibid., Bogotá, Venezuela, Ecuador; *H. eubœa*, ibid., Surinam; *H. velia*, p. 423, Bogotá; *H. seriphia*, ibid., Venezuela, Caraccas, Bogotá; *H. massilia*, ibid., Mexico; *H. epidamna*, p. 424. *H. olynthia*, ibid., pl. 57. figs. 8 & 9, and *H. tizona*, ibid., Bogotá.

Heterochroa. The following new species of this genus are described and figured by Hewitson (Exot. Butt. 62, April 1867):—*H. ethelda*, figs. 3 & 4, Quito; *H. gerona*, figs. 5 & 6, Minas Geraës; *H. zina*, figs. 7 & 8, New Granada.

Heterochroa saundersii, Hewitson, Trans. Ent. Soc. 3rd ser. v. p. 564, Ecuador.

Pandita sinoria, Feld. *l. c.* p. 425, Borneo.

Euomma angustatum, Feld. *l. c.* p. 425, Old Calabar.

Neptis affinis, Feld. *l. c.* p. 426, Aru; *N. nirvana*, Feld. ibid., Celebes; *N. magadha*, Feld. *l. c.* p. 427, North India.—*Neptis charon*, Butler, Ann. & Mag. N. H. 3rd ser. xx. p. 400, pl. 9. fig. 1, Singapore.

Phædyma helicopolis, Felder, *l. c.* p. 427, Halmaheira; *P. eremita* (Boisd. MS.), Feld. *l. c.* p. 428, Luzon; *P. sarabaita*, Feld. ibid., Celebes; *P. daria*, Feld. ibid., pl. 56. figs. 5 & 6, Celebes.

Athyma jadava, Felder, *l. c.* p. 429, and *A. gandara*, Feld. ibid., Java.

Euryphene guineensis, Felder, *l. c.* p. 430, and *E. calabarensis*, Feld. ibid., Old Calabar.

Romalæosoma zambesia, Felder, *l. c.* p. 430, Zambesi; *R. afzelii*, Feld. ibid., Sierra Leone; *R. campaspe*, Feld. *l. c.* p. 431, Gaboon.

Adolias. C. & R. Felder (*l. c.*) describe the following new species of this genus:—*A. jama*, p. 431, Assam, Malacca, Banca; *A. somadeva*, p. 432, Northern India; *A. eva*, ibid., Assam, Luzon, Java, Celebes; *A. soma*, ibid., India; *A. asoka*, p. 433, pl. 58. fig. 1, Malacca, Borneo; *A. mitra*, ibid., Sumatra, Banca; *A. vikrama*, ibid., Sumatra; and *A. valmikis*, p. 434, Borneo.

Apatura. C. & R. Felder (*l. c.*) describe the following new species of this genus:—*A. panchæa*, p. 434, Java; *A. acca* (Boisd. MS.), p. 435, pl. 57. fig. 2, Mexico; *A. cherubina*, p. 435 (=*lavrentia*, Feld. olim nec God.); *A. angelina*, p. 436, pl. 57. fig. 6, origin unknown; *A. moritziana*, ibid., Venezuela; and *A. clothilda*, p. 437, pl. 57. figs. 4 & 5, Bogotá.

Prepona simois, Felder, *l. c.* p. 437, and *P. demophile* (Boisd. MS.), Feld. ibid., Bogotá.

Charaxes. C. & R. Felder (*l. c.*) describe the following new species of this genus:—*C. mandarinus*, p. 437, Shanghai; *C. attalus*, p. 438, Java; *C. bharata*, ibid., Darjeeling; *C. arja*, ibid., Assam; *C. jalysus*, ibid., pl. 59. fig. 5, Malacca; *C. brennus* *, p. 439, pl. 59. figs. 1 & 2, Halmaheira; *C. cimon*, ibid., pl. 58. figs. 6 & 7, Batchian; *C. parmenion*, ibid., Celebes; *C. demonax*, p. 440, Celebes; *C. scylax*, p. 442, Java; *C. hierax*, ibid., *C. hipponax*, p. 443, and *C. pleistoanax*, ibid., Assam; *C. corax*, p. 444, North India; *C. harpax*, ibid., origin unknown; *C. harmodius*, p. 445, Java; *C. aristogiton*, ibid., origin unknown; *C. hansalii*, p. 446, pl. 59. figs. 3 & 4, South-eastern Africa and *C. achæmenes*, ibid., pl. 59. figs. 6 & 7, Port Natal, Zambesi.

Charaxes echo, Butler, Ann. & Mag. N. H. 3rd ser. xx. p. 400, pl. 8. figs. 5, 6, Singapore.

Olina stalachtoides, Bates, Trans. Ent. Soc. 3rd ser. v. p. 540, Maranham and Pará.

[*Paphia*, Westw.] *Nymphalis*. C. & R. Felder (*l. c.*) describe the following new species of this genus:—*N. pyrrhothea*, p. 447, pl. 60. fig. 3, *N. titan*, ibid., pl. 60. fig. 4, *N. centaurus*, ibid., pl. 60. fig. 5 (=*nessus*, God.), and *N. psammis*,

* Identical with *C. latona* (Butl.).

p. 448, Bogotá; *N. memphis*, ibid., Bogotá and Amazons; *N. amenophis* p. 449, Bahia; *N. maris*, ibid., pl. 60. fig. 2, Bogotá.

Ergolis luzonia, Felder, *l. c.* p. 450, Luzon; *E. obscura*, Feld. ibid., pl. 61. figs. 3, 4, Halmaheira.

Cystinecura bogotana, Felder, *l. c.* p. 451, and *C. semifulva*, Felder, ibid., Bogotá.

Melanitis cumæa, Felder, *l. c.* p. 452, pl. 61. figs. 9, 10, Halmaheira.

Cyclogramma bimaculata, Hewitson, *l. c.* p. 565, Mexico.

Morphides.

C. & R. Felder (Reise der Novara, Zool. ii. Lep. Heft 3) figure the following species of this group, the diagnoses of which were previously published by them:—*Pavonia lycomedon*, pl. 65. fig. 3; *P. oileus*, pl. 65. fig. 2; *P. telamonius*, pl. 64. fig. 1; *Morpho iphiclus*, pl. 64. fig. 2, and pl. 65. fig. 1; *M. cypris* (Westw.), pl. 63. figs. 1–3.

Morpho hecuba (Linn.). Lucas describes the ♂ of this species, which is quite different from *P. telemachus* (Cram.), regarded as the ♂ by Doubleday and Hewitson. *P. telemachus* is the ♀ of *Morpho anaxibia* (Esp.). Ann. Soc. Ent. Fr. 4ᵉ sér. vii. pp. 659–664.

Lucas describes the ♀ of *Morpho cypris*, Bull. Soc. Ent. Fr. 1867, p. lvii.

New species:—

Opsiphanes didymaon, Felder, *l. c.* p. 453, and *O. bassus*, Feld. ibid., South Brazil.

Pavonia amphimedon, Felder, *l. c.* p. 454, Brazil; *P. memnon*, Feld. ibid., Mexico, Guatemala; *P. epimetheus*, Feld. *l. c.* p. 455, Bogotá.

Morpho. C. & R. Felder describe the following new species of this genus:—*M. scipio*, p. 455, South Brazil; *M. psyche*, p. 456, Brazil; *M. thamyris*, ibid., Brazil; *M. iphitus*, p. 457, origin unknown; *M. achillides*, ibid., South Brazil; *M. granadensis* (Deyr. MS.), p. 458, Bogotá; *M. leontius*, ibid., Bogotá; and *M. briseis*, p. 459, Brazil.

Clerome amathusia, Hewitson, Ent. Trans. 3rd ser. v. p. 566, India.

Clerome gracilis, Butler, Ann. Mag. N. H. 3rd ser. xx. p. 401, pl. 8. fig. 7, Malacca.

Satyrides.

Mycalesis. Butler has published a revision of the Fabrician species referable to this genus, chiefly from the examination of the types in the Banksian collection (Proc. Zool. Soc. 1867, pp. 718–721). He gives the following indications of their synonymy:—1. *P. melusina* (Fab.) = *dorothea* (Cram.) = *M. raesaces* (Hew.); 1*a*. *P. miriam* (Fab.), a var. of preceding; 2. *P. perseus* (Fab.), fig. 2, p. 718 = *P. tabitha* (Fab.), a var. of *P. otrea* (Cram.); 2*a*. *P. clerimon* (Fab.), also a var. of *P. otrea*; 3. *P. blasius* (Fab.), fig. 4, p. 718 = *M. samba* (Moore); 4. *P. medus* (Fab.) = *doris* (Cram.), a var. of *hesione*; 5. *P. martius* (Fab.), of which *M. moorei* (Feld.) is a var.; 6. *P. terminus* (Fab.), figg. 3, 3*a*, p. 718; 7. *P. sirius* (Fab.), fig. 1, p. 718, of which *M. daidis* (Hew.) and *M. manipa* (Boisd.) are vars.; 7*a*. *P. zachæus* (Fab.) = *sirius* var.; 8. *P. narcissus* (Fab.).

Butler, in characterizing his new genus *Anadebis* (Ann. & Mag. N. H. 3rd ser. xix. p. 50), indicates and figures the distinctive characters of the allied genera *Mycalesis*, *Debis*, and *Orinoma*. He considers that *Amechania* (Hew.)

belongs to the *Satyridæ*, near *Orinoma*. Butler figures *Debis diana* (Butl.), with the neuration and palpus of *Debis* (*l. c.* pl. 2. figs. 2, 2*a*, 2*b*), *Mycalesis gamaliba* (Walk. MS.) with its neuration and palpus (*l. c.* figs. 3, 3*a*, 3*b*), and the neuration and palpus of *Orinoma* (*l. c.* figs. 4, 4*a*).

Butler also remarks (*l. c.* pp. 51–54) upon the variations of *Cyllo leda* (Linn.), of which he gives indications of 41 forms contained in the collection of the British Museum. These include the following described as species:—*Pap. solandra, banksia* (Fab.), *Cyllo helena* (Westw.), *Pap. ismene, mycena, phedima, arcensia* (Cram.), *Cyllo taitensis* (Feld.).

Butler (Ann. & Mag. N. H. 3rd ser. xix. p. 161) remarks upon the characters of the genus *Lasiommata* (Westw.) = *Pararge* (Hübn.), which he regards as including several generic types. To *Lasiommata* pr. Butler refers the following species:—*L. ægeria* and *dejanira* (Linn.), *tircis* (God.), *xiphia, roxelana*, and *clymene* (Fab.), and *meone* (Cram.). The type of Hübner's genus *Dira* is a true *Lasiommata*. Butler figures *Lasiommata ægeria* and the club of its antenna (pl. 4. figs. 2, 2*a*). He also objects (*l. c.* p. 162 note) to the adoption of the genus *Pararge* as proposed by Ström.

Pronophila (Westw.). Butler (Ann. & Mag. N. H. 3rd ser. xx. pp. 266–268) has subjected the species referred to this group to a revision, which leads him to recognize in them 6 distinct genera, 3 of which are characterized as new. The others are, besides *Pronophila*, *Lasiophila* (Feld.) and *Dædalma* (Hew.). The type of *Pronophila* is *P. thelebe* (Westw. & Hew.).

Butler (Ann. & Mag. N. H. 3rd ser. xix. pl. 3) figures the details of his new genus *Hipparchioides*, and, for comparison therewith, the neuration of the hind wing in *Lasiommata*? (fig. 4) and *Satyrus* (fig. 5), the club of the antennæ in the same genera (figs. 10 & 11) and the plumules of *Lasiommata*?, *Satyrus*, and *Epinephele* (figs. 13–15).

Butler remarks (Entomologist, iii. pp. 277–281) on the nomenclature of the European genera of this group, and proposes some changes. Some of his observations are criticised by Kirby (*l. c.* pp. 291–293); and Butler replies (*l. c.* pp. 319, 320).

Butler remarks that of the two specimens figured by Stephens under the name of *Erebia ligea*, the ♂ = *E. euryale* (Esp.). Ent. M. Mag. iv. p. 151.

Butler (Ann. & Mag. N. H. 3rd ser. xx.) characterizes and figures *Papilio polydecta* (Cram.), *l. c.* p. 402, pl. 9. figs. 5, 6, which he refers to *Mycalesis*, and also *Debis manthara* (Feld.), *l. c.* p. 403, pl. 9. fig. 9, referred to *Lethe* (Hübn.).

C. & R. Felder (Reise der Novara, Zool. ii. Lep. Heft 3) figure the following species previously described by them:—*Antirrhæa philopæmen*, pl. 66. figs. 3, 4; *A. lindigii*, pl. 66. figs. 1, 2; *A. geryon*, pl. 67. figs. 1, 2; *A. hela*, pl. 66. figs. 5, 6; *Clerome leucis*, pl. 62. figs. 5, 6; *Zeuxidia semperi*, pl. 62. figs. 1, 2; *Taygetis calliomma*, pl. 66. fig. 7; *Dædalma dorinda*, pl. 67. figs. 3, 4; *Ptychandra lorquinii*, pl. 68. figs. 1–3; *Mycalesis ita*, pl. 68. figs. 8, 9; *M. tagala*, pl. 67. figs. 7, 8.

Euptychia. Butler figures the following species of this genus described by him in his monograph published in 1866 (see 'Record,' 1866, p. 463):—*E. pagyris*, Proc. Zool. Soc. 1867, pl. 11. fig. 1, *ægrota*, fig. 2, *philippa*, fig. 3, *metagera*, fig. 4, *erycina*, fig. 6, *gemmula*, fig. 7, *ocnus*, fig. 8, *obscura*, fig. 9, *pyracmon*, fig. 10, *junonia*, fig. 11, *argyrospila*, fig. 12, *libycidea*, fig. 13, *lethe*, pl. 12. fig. 1, *nebulosa*, fig. 2, *westwoodii*, fig. 3, *hiemalis*, fig. 4, *poly-*

phemus, fig. 5, *picea*, fig. 6, *mima*, fig. 7, *similis*, fig. 10, *vastata*, fig. 11, *modesta*, fig. 12, *byses*, fig. 15, and *periphas*, fig. 16.

Stainton (Brit. Butt. and Moths, pl. 1) figures *Arge galathea*, fig. 3, and *Hipparchia tithonus*, fig. 4.

Chionobas aëllo (Esp.), var. A, figured and described by Millière, Ann. Soc. Linn. Lyon, xiv. p. 329, pl. 75. fig. 1.

Satyrus. W. H. Edwards (Proc. Ent. Soc. Phil. vi. pp. 195–200) remarks on the characters and synonymy of several North-American species of this genus. He identifies *S. pegala* (Fab.), and discusses the characters of *S. alope* (Boisd. & Lec.), *S. nephele* (Kirby), and *S. boöpis* (Behr).

G. Allard (Ann. Soc. Ent. Fr. 4e sér. vii. p. 315) notices 5 Algerian species of this group, namely, *Arge clotho*, var. *atropos*, *A. ines*, *Satyrus abd-el-kader*, *S. semele*, and *Epinephile lycaon*.

Kirby states that the *Cœnonympha mandana* of his manual of European Butterflies = *C. iphis* ♀. Ent. M. Mag. iv. p. 69.

Newman describes the life-history of *Satyrus ægeria* and *S. tithonus*. Entomologist, iii. pp. 217, 218.

New genera:—

Bletogona, g. n., Felder, Reise der Novara, Zool. ii. Lep. p. 465. Allied to *Cyllo*; palpi rather more exceeding head; wings very entire, not angulate, discoidal cell of anterior with the lower angle more projected. Sp. *B. mycalesis*, sp. n., Feld. *l. c.* p. 465, pl. 68. figs. 6, 7, Celebes.

Idioneura, g. n., Felder, *l. c.* p. 474. Allied to *Lymanopoda*; wings elongate, entire, anterior with inner angle not distinguishable, outer margin convex, apex rounded, discoidal cell short, its upper angle not projected, uppermost discocellular venule short, straight, subcostal distant from costal, its second branch rising before the apex of the cell. Sp. *I. erebioides*, sp. n., Feld. *l. c.* p. 474, Bogotan Cordillera.

Homœonympha, g. n., Felder, *l. c.* p. 487. Allied to *Pseudonympha* (Walleng.); antennæ shorter, not ringed, club more ovate; palpi shorter, joint 3 very short; intermediate discocellular venule in anterior wings much longer, sigmoid, lowest one-half shorter, inferior discoidal vein much nearer to median vein. Sp. *H. pusilla*, sp. n., Feld. *l. c.* p. 487, Chili.

Tetraphlebia, g. n., Felder, *l. c.* p. 487. Allied to preceding; antennæ longer, with a narrower club; palpi shorter and more shortly haired; upper discoidal given off close to subcostal. Sp. *T. germainii*, sp. n., Feld. *l. c.* p. 488, Chili.

Faunula, g. n., Felder, *l. c.* p. 488. Allied to preceding; antennæ short, club short and pyriform; palpi very hairy; vertex pilose; second subcostal branch in fore wings distant from cell, lower discoidal vein springing from the middle of the discocellular venule. Sp. *F. leucoglene*, sp. n., Feld. *l. c.* p. 488, Chili.

Stygnus, g. n., Felder, *l. c.* p. 489. Allied to *Tetraphlebia*; anterior wings with upper discoidal vein more distant from subcostal, lowest discocellular venule directed more inwards towards costa; posterior wings with median branch of discoidal vein more approximated to 3rd, upper discocellular venule long, slightly bent, 1st median branch much further from 2nd than this from 3rd. Sp. *S. humilis*, sp. n., Feld. *l. c.* p. 489, Valdivia.

Cosmosatyrus, g. n., Felder, *l. c.* p. 495. Allied to *Satyrus*; antennal club

narrow, much excavated; palpi slender, twice as long as head, densely pilose in front, joint 3 acicular. Sp. *C. leptoneuroides*, sp. n., Feld. *l. c.* p. 495, Chili.

Eugesia, g. n., Felder, *l. c.* p. 504. Of this genus C. & R. Felder make the type of a new family (subfamily), *Eumesiidæ*, intermediate between the *Satyridæ* and *Hesperiidæ*, having the head, palpi, and body of the former, the discoidal cell and general form of the wings of the latter. The subcostal vein of the fore wings has 5 branches; and the fifth branch and terminal portion of the vein reach the outer margin below the apex. Sp. *E. semiargentea*, sp. n., Felder, *l. c.* p. 505, pl. 69. figs. 17, 18, Columbia.

Anadebis, g. n., Butler, Ann. & Mag. N. H. 3rd ser. xix. p. 50. Allied to *Debis*; eyes naked; antennæ scarcely clavate; palpi erect; neuration as in *Debis*. Sp. *Theope himachala* (Moore), pl. 2. fig. 1 (= *Neorina sita*, Feld.).

Hipparchioides, g. n., Butler, *l. c.* p. 125, pl. 3. figs. 3, 6-9, & 12 (details). Allied to *Epinephile*; antennæ with a solid, nearly fusiform club; subcostal vein in hind wings subangulated, cell simple, not pointed at apex, veins regular, nearly equidistant. Sp. *Papilio merope* (Fab.); *Satyrus philerope* (Guér.), pl. 3. fig. 2; *Hipparchia banksia* (Leach); and *Lasiommata mirifica* (Butl.), pl. 3. fig. 1. New sp. *H. duboulayi*, Butler, *l. c.* p. 167, Champion Bay.

Amecera, g. n., Butler, Ann. & Mag. N. H. 3rd ser. xix. p. 162, = *Lasiommata* p. Anterior wings with the posterior margin very slightly waved, not angulated at apex; posterior wings much elongated, scarcely sinuated at the posterior margin, cell shorter than in *Lasiommata*. Sp. *Papilio megæra* (Linn.), pl. 4. fig. 1 (head and club); *P. mæra* (Linn.); *Satyrus lyssa, hiera* (Hübn.); *Pap. tigelius* (Bon.); *Hipparchia eversmannii* (Eversm.); *Sat. shakra* (Koll.), *Las. menava* and *baldiva* (Moore).

Rhaphicera, g. n., Butler, *l. c.* p. 164. (*Lasiommata* p.) Allied to *Arge*; anterior wings elongate triangular, costa subconvex, posterior margin short, convex, inner margin nearly straight, veins scarcely tumid at base, disco-cellular veins oblique; posterior wings pyriform, costa nearly straight, posterior margin denticulate; antennæ long, slender, gradately clavate. Sp. *Las. satricus* (Hew. & Westw.), pl. 4. fig. 3; and *R. moorei*, sp. n., Butl. *l. c.* p. 163, pl. 4. fig. 4 (= *Las. satricus* Moore), Himalayas.

Geitoneura, g. n., Butler, *l. c.* p. 164, pl. 4. fig. 5 (hind wing). (*Lasiommata* p.) Allied to preceding; wings moderate, anterior subtrigonate, costa nearly straight, posterior margin entire, subconvex, inner margin straight, veins tumid at base, first median nervule emitted beyond middle of median vein; posterior pyriform, cell abruptly attenuated from the middle, obliquely truncated at apex; antennæ short, club gradate; eyes naked. Sp. *Sat. klugii* (Guér.) and *P. achanta* (Don.).

Argynnina, g. n., Butler, *l. c.* p. 165, pl. 4. figs. 6, 6*a* (hind wing and club) (*Lasiommata*, subg. *Xenica* p.) Allied to preceding; wings small, anterior elongate, subtrigonate, with nearly straight margins, veins tumid at base, cell elongate, first median nervule emitted at middle of median vein; posterior pyriform, cell gradually attenuated; antennæ short, club compressed, pyriform; eyes serrate. Sp. *Las. hobartia* and *lathoniella* (Westw.).

Neope, g. n., Butler, *l. c.* p. 166. Allied to *Debis*; wings large, anterior elongate, subtrigonate, costa somewhat convex, hinder margin denticulate, veins scarcely tumid at base; antennal club gradate. Sp. *Las. bhadra* and *pulaha* (Moore); *N. moorei*, sp. n., Butl. *l. c.* p. 166, pl. 4. fig. 7, East Indies; *N. japonica*, sp. n., Butl. *l. c.* p. 167, Japan.

Callereba, g. n., Butler, Ann. & Mag. N. H. 3rd ser. xx. p. 217. Closely allied to *Erebia*; form and markings of the wings as in *Callisto*; antennæ more slender and less distinctly clavate, and palpi more angulate. Sp. *Erebia scenda* (Koll.), pl. 4. figs. 8 & 9; *E. annada* and *nirmala* (Moore).

Pedaliodes, g. n., Butler, *l. c.* p. 207, fig. 1 (neuration). (*Pronophila* part.) Wings moderate, anterior somewhat irregular, posterior with the margin sinuated; cell in anterior with its apex undulated; 3rd subcostal and 1st discoidal veins approximated near base. Sp. *P. poesia* (Hew.) and 23 others, including *P. dejecta* and *napæa* (Bates). The rest described by Hewitson.

Gyrocheilus, g. n., Butler, *l. c.* p. 207, fig. 3 (neuration). (*Pronophila* part.) Wings moderate; anterior subpyriform, rounded at apex, cell short, discocellular veins angularly placed, forming 2 forks; eyes nearly naked; palpi elongate, cirrate, nearly straight. Sp. *P. patrobas* (Hew.).

Oxeoschistus, g. n., Butler, *l. c.* p. 208. (*Pronophila* part.) Wings large; anterior subfalcate, outer margin more or less waved, cell elongate, bifurcate at apex, lower fork largest, upper fork acuminate; eyes cirrate; palpi elongate, waved, porrect. Sp. *P. puerta, protogenia, pronax, propylea, prochyta* (Hewits.), *irmina* and ? *tauropolis* (Hew. & Westw.), and ? *hilara* (Bates).

Amphidecta, g. n., Butler, *l. c.* p. 404. Allied to *Taygetis*; anterior wings resembling those of *Dædalma*; posterior with the costal margin nearly straight, obliquely cut off at apex, outer margin quadrisinuate, anal angle oblique, inner margin excavated at anal angle; eyes naked; palpi elongate; antennæ very slender, scarcely clavate. Sp. *A. pignerator*, sp. n., Butl. *l. c.* p. 405, pl. 9. fig. 11, Ega.

Aulocera, g. n., Butler, Ent. M. Mag. iv. p. 121. Allied to *Hipparchia*; wings large, black, banded with white; cilia broad; veins of anterior wings less tumid, and discoidal cell of hind wings more regular than in *Hipparchia*; antennal club gradate, slender, with a longitudinal stria beneath. (Neuration and antennal club figured *l. c.* fig. 1, and contrasted with those of *Hip. proserpina*, *l. c.* fig. 2.) Sp. *Sat. brahminus* (Blanch.)=*swaha* (Koll.); *S. saraswati* (Koll.); *S. padma* (Koll.); *S. avatara* (Moore); and *A. scylla*, sp. n., Butler, *l. c.* p. 122, Sylhet.

New species:—

Hætera latona, Felder, *l. c.* p. 459, Bogotá; and *H. hymenæa* (Boisd. MS.), Feld. ibid., Bahia.

Hyades macrops, Felder, *l. c.* p. 460, Halmaheira, Ternate.

Clerome lurida, Felder, *l. c.* p. 460, Mindoro.

Zeuxidia horsfieldii, Felder, *l. c.* p. 460, pl. 62. fig. 4, Java; *Z. wallacei*, Feld. *l. c.* p. 461, pl. 62. fig. 3, Borneo.

Amathusia pylaon, Felder, *l. c.* p. 461, Java; *A. porthaon*, Feld. ibid., Java; *A. portheus*, Feld. ibid., North India.

Discophora bambusæ (Boisd. MS.), Felder, *l. c.* p. 462, Halmaheira; *D. necho*, Feld. ibid., Java; *D. cheops*, Feld. *l. c.* p. 463, Borneo.

Cyllo. C. & R. Felder (*l. c.*) describe the following new species of this genus:—*C. velutina*, p. 463, Celebes; *C. tristis*, p. 464, North India; *C. duryodana*, ibid., Bengal, Assam; *C. obsolcta*, ibid., Celebes, Java; and *C. fulvescens*, p. 465, Halmaheira.

Taygetis larua, Felder, *l. c.* p. 466, *T. inornata*, Feld. ibid., *T. neonympha*, Feld. *l. c.* p. 467, and *T. anophthalma*, Feld. ibid., Bogotá.

Taygetis albinotata, Butler, Ann. Mag. N. H. 3rd ser. xx. p. 216, pl. 4. figs. 6 & 7, Bolivia.

Pronophila. C. & R. Felder (*l. c.*) describe the following new species of this genus:—*P. ochrotœnia*, p. 467, *P. cocytia*, p. 468, *P. perperna*, ibid., *P. empusa*, ibid., *P. manis*, p. 469, *P. creiba*, ibid., Bogotá; *P. satyroides*, ibid., Caraccas; *P. decorata*, p. 470, pl. 67. fig. 11, Bogotá; *P. porphyria*, ibid., Venezuela; *P. apuleja*, p. 471, Venezuela; *P. ocellifera*, ibid., Bogotá; *P. cncycla* (Moritz, MS.), p. 472, Venezuela; *P. calisto*, ibid., *P. oculata*, ibid., and *P. mycalesoides*, p. 473, Bogotá.

Lymanopoda lebbæa, Felder, *l. c.* p. 473, *L. lanassa*, Feld. *l. c.* p. 474, and *L. apiculata*, Feld. ibid., Bogotá.

Steroma andensis, Felder, *l. c.* p. 475, and *S. pronophila*, Feld. ibid., Bogotá, Ecuador.

Neonympha. C. & R. Felder (*l. c.*) describe the following new species of this genus:—*N. epinephele*, p. 476, Mexico; *N. eugenia* (Moritz, MS.), ibid., Venezuela; *N. jovita*, p. 477, Bogotá; *N. alcinoë*, ibid., Bogotá and Venezuela; *N. sylvina*, p. 478, Bahia; *N. numeria*, ibid., Bahia; *N. numilia*, ibid., Bogotá; *N. pompilia*, p. 479, Bogotá; *N. peloria*, ibid., Venezuela; *N. manasses*, ibid., Bahia; *N. griphe* (Moritz, MS.), p. 480, Venezuela and Bogotá; *N. laccine* (Moritz, MS.), ibid., Venezuela and Bogotá; *N. innocentia* (Moritz, MS.), p. 481, Venezuela; *N. yphthima*, ibid., Bahia; *N. antonina*, p. 482, Bahia, Amazons, and Cayenne; *N. harpyia*, ibid., Surinam; *N. terentia*, p. 483, Cayenne; *N. sabina*, ibid., Amazons, Cayenne; *N. iris*, ibid., Bogotá; *N. calpurnia*, p. 484, Cayenne; and *N. hilara*, p. 485, Bogotá.

Acrophthalmia leuce, Felder, *l. c.* p. 486, Celebes; *A. chione*, Feld. ibid., pl. 68. figs. 12, 13, Halmaheira.

Yphthima batesii, Felder, *l. c.* p. 486, pl. 68. figs. 10, 11, Madagascar.

Euptychia. Butler (Proc. Zool. Soc. 1867) describes the following new species of this genus:—*E. themis*, p. 104, pl. 12. fig. 13, origin unknown; *E. vestigiata*, p. 105, pl. 12. fig. 17, *E. straminea*, p. 106, pl. 12. fig. 9, *E. angularis*, ibid., pl. 12. fig. 8, and *E. armilla*, p. 108, pl. 12. fig. 21, Minas Geraës; *E. ochracea*, p. 107, pl. 11. fig. 5, Brazil; *E. pronophila*, ibid., pl. 12. fig. 20, Rio Janeiro; *E. liturata*, ibid., pl. 12. fig. 18, and *E. vesper*, p. 108, pl. 12. fig. 19, of unknown origin; and *E. fumata*, p. 109, pl. 12. fig. 14, Rio Grande.

Chionobas nevadensis (Boisd. MS.), Felder, *l. c.* p. 489, pl. 69. figs. 4, 5, California; and *C. pumilus*, Feld. *l. c.* p. 490, pl. 69. figs. 6, 7, Western Himalaya.

Epinephele. C. & R. Felder (*l. c.*) describe the following new species of this genus:—*E. pulchella*, p. 490, pl. 69. fig. 16, *E. pulchra*, p. 491, *E. roxane*, ibid., pl. 69. figs. 12, 13, *E. canonympha*, p. 492, pl. 69. figs. 14, 15, Western Himalayas; *E. dryas*, ibid., Chili; *E. valdivia*, p. 493, Valdivia; *E. peliozona*, ibid., Valdivia; and *E. glaucope* (Klug, MS.), ibid., pl. 67. figs. 5, 6, Brazil.

Satyrus hübneri, Felder, *l. c.* p. 494, pl. 69. figs. 8, 9, and *S. pimpla*, Feld. ibid., pl. 69. figs. 10, 11, Western Himalaya.

Lasiommata maroides, Felder, *l. c.* p. 496, pl. 69. fig. 1, India; and *L. mœrula*, Feld. ibid., Western Himalaya.

Debis dyrta, Felder, *l. c.* p. 497, Bengal; *D. manthara*, Feld. ibid., and *D. darena*, Feld. *l. c.* p. 498, pl. 68. figs. 4, 5, Java.

Ptychandra leucogyne, Felder, *l. c.* p. 498, Halmaheira.

Cœlites vicinus, Felder, *l. c.* p. 499, Celebes; *C. euptychiodes*, Feld. ibid., Borneo.

Cœlites humilis, Butler, Ann. & Mag. N. H. 3rd ser. xx. p. 403, pl. 8. fig. 8, and pl. 9. fig. 2, Malacca.

Mycalesis. C. & R. Felder (*l. c.*) describe the following new species of this genus:—*M. borealis*, p. 500, North China; *M. sudra*, ibid., pl. 67. fig. 10, Java (= ♂ *M. nala*, Feld. olim), and *M. gopa*, p. 501, Darjeeling; *M. moorei*, p. 502, pl. 67. fig. 9, Java; *M. nebulosa*, ibid., Guinea; *M. itys*, p. 503, Celebes.

Mycalesis cinerea, Butler, *l. c.* p. 401, pl. 8. fig. 9, Singapore; *M. cepheus*, Butl. *l. c.* p. 402, pl. 9. figs. 3, 4, Penang; *M. nautilus*, Butl. ibid., pl. 9. fig. 7, Malacca, India.

Lethe whitelyi, Butler, *l. c.* p. 403, pl. 9. fig. 8, Nagasaki.

Elymnias lutescens, Butler, *l. c.* p. 404, pl. 9. fig. 10, Borneo, Malacca, Singapore, Penang.

(*Enodia*) *joanna*, sp. n. ?, Butler, Ann. & Mag. N. H. 3rd ser. xix. pl. 4. fig. 8, not described.

Erycinides.

Bates has commenced (Journ. Linn. Soc. ix. Zool. pp. 367–372) a general revision of the species of this group, of which he says there are at present about 630 described. Of these, all, except 34, are natives of Tropical America; the number of species is greatest in the Equatorial district (Bates collected 370 species on the Amazons), and diminishes towards the tropics. Of the 34 species above-mentioned, 30 occur in the Old World and 4 in North America. The latter belong to South-American types. Bates proposes a classification founded upon the venation of the wings, which may be indicated as follows:—

(Subf.) I. Nemeobiinæ; subcostal vein of fore wing with 4 branches (excepting some species of *Mesosemia*). This group includes the Old-World forms and a few South-American genera.

(Subf.) II. Eurygoninæ; subcostal branches varying from 2 to 4; lower radial (discoidal) vein completely connected with the subcostal.

(Subf.) III. Erycininæ; subcostal branches 3; lower radial vein not connected with subcostal.

The portion of Bates's paper published in 1867 contains only the introductory remarks and descriptions of some new species belonging to his first group.

Butler has published (Journ. Linn. Soc. ix. Zool. pp. 213–229) a monographic revision of the genus *Lemonias*, and of some species of allied genera sometimes included in it (*Aricoris*, *Tharops*, *Anatole*, and *Apodemia*). He also notices *Emesis? petronius* (Fab.), and *Nymphidium? kadenii* (Feld.) as doubtful species of *Lemonias*. Butler likewise notices the following species described by Felder: *L. cæcina* and *martialis* are allied to *L. cerealis* (Hew.), or perhaps species of *Charis*; *L. colchis* belongs to *Apodemia*; *L. sperthias*=*Nymphidium abaris* ♂ (Fab.); *L. chilensis* belongs to *Anatole*;

Desmozona hemixanthe = *Lemonias sosybius*; *Aricoris petavia* = *pherepatte*, var.; and *A. babiana*=*uranus* ♀. The following known species are figured by Butler:—*L. alector* (Hübn.), pl. 6. fig. 1; *L. leucocyana* (Hübn.), pl. 6. figs. 6 & 7; *L. pseudo-crispus* (Westw.), pl. 6. figs. 9 & 10; *L. nepia* (Hew.) ♂, pl. 6. fig. 11; *L. rhesa* (Hew.), ♀, pl. 6. fig. 16; *Tharops ion* (Westw.), pl. 6. figs. 22 & 23; *Aricoris lagus* (Cram.), pl. 7. figs. 2 & 4; *A. irene* (Westw.), pl. 7. fig. 8; *A. epitus* (Cram.), vars., pl. 7. figs. 9 & 10, 12 & 14; *A. serica* (Westw. & Hew.) ♂, pl. 7. fig. 13; *Apodemia colchis* (Feld.), var., pl. 7. fig. 17. He also figures the neuration of the genus *Lemonias* and the palpi of species of the other generic forms.

Nymphidium. Butler (Ent. M. Mag. iii. pp. 222–224) discusses the synonymy of some species of this genus. *N. soranus* and *orestes* are probably distinct. Cramer's figures both represent females. *N. ascolia* (Hew.), probably = *Papilio damon* (Stoll); the specimen figured as *N. platea*, in Genera Diurn. Lepid. = *lysimon* (Stoll); *N. platea* is intermediate between *N. omois* (Hew.) and *N. acherois* (Boisd.); the ♀ of Doubleday's *N. platea* is described by Butler as a new species; the ♀ of *N. belise* (Cram.) = *Pap. irenea* (Cram.), which has been placed in the genus *Pyrrhogyra*.

Butler (Proc. Zool. Soc. 1867, pp. 37–39), in proposing a new genus allied to *Taxila*, discusses the forms included in that genus and in the allied genera *Sospita* and *Dodona*. He figures *Dodona onida* (Hew.), *l. c.* p. 38. fig. 2, and *Sospita tantalus* (Hew.), ibid. fig. 3, to show their general form and venation.

Cremna. Bates (Trans. Ent. Soc. 3rd ser. v. pp. 542–543) gives a list of the known species of this genus. He refers to it *C. eeneus* (Cram.), *C. phryxe* (Feld.), and *C. actoris* (Cram.), and 4 new species; *C. orpheus* (Doubld. & Hew.) is a *Lemonias* or *Anatole*; and *C. thasus* (Cram.) is doubtful, perhaps a *Charis*.

Anteros. Hewitson (Exot. Butt. 63, June 1867) figures *A. carausius* (Westw.), figs. 3, 4, *A. allectus* (Westw.), figs. 5, 6, and *A. otho* (Westw.), figs. 9, 10.

Symmachia (*Cricosoma*) *leopardina* (Feld.) is figured by Hewitson, Exot. Butt. 61, Jan. 1867, *Symm.* fig. 5 (sub nom. *S. hilaria*).

Pseudopheles, g. n., Bates, Trans. Ent. Soc. 3rd ser. v. p. 544. Allied to *Pheles*; upper radial vein in fore wings emitted at end of cell in conjunction with discocellular venule, lower radial midway between subcostal and median veins. Sp. *P. sericina*, sp. n., Bates, *l. c.* p. 544, Maranham, Pará, and Upper Amazons.

Dicallaneura, g. n., Butler, Proc. Zool. Soc. 1867, p. 37. Allied to *Taxila*; wings short, anterior with convex margins, posterior with the costa convex and an obtuse tail; cell in anterior broad, short, much excavated at apex, discocellular veins in posterior oblique. Sp. *Taxila pulchra* (Guér.), and *T. decorata* (Hew.), *l. c.* p. 38. fig. 1.

Metacharis, g. n., Butler, Ent. M. Mag. iii. p. 174. Allied to *Lemonias* and *Charis*; palpi minute; antennæ long and slender, club elongated. Sp. *Hesperia ptolomæus* (Fab.), *Pap. agrius* (Dalm.), *Charis cadmeis* (Hew.). New sp. *M. regalis*, Butler, *l. c.* p. 175, and *M. batesii*, Butl. ibid., Brazil. (Palpi and antennal clubs of *Lemonias*, *Metacharis*, and *Charis* figured on p. 174.)

New species:—

Lemonias. Butler (Journ. Linn. Soc. ix. Zool.), describes the following

new species of this genus:—*L. violacea*, p. 214, pl. 6. figs. 2, 3, Ega; *L. hübneri* (= *aristus*, Doubl., Hew., = *leucocyana*, Westw.), p. 214, pl. 6. figs. 4, 5, Para; *L. bolena*, p. 215, pl. 6. fig. 8, Brazil; *L. nepioides*, p. 217, pl. 6. figs. 12, 13, Tapajos, Para; *L. bubo*, p. 217, pl. 6. figs. 14, 15, origin not stated; *L. caprea* (=*zeanger*, Westw.), p. 218, pl. 6. figs. 17, 18, Tapajos, Para; and *L. borsippina*, p. 219, pl. 6. fig. 20, Tapajos.

Aricoris. Butler (*l. c.*) describes the following new species:—*A. amethystina*, p. 220, pl. 7. fig. 7, Santarem; *A. pythioides*, p. 220, pl. 7. fig. 3, Ega; *A. cyanea*, p. 221, pl. 7. figs. 5, 6, Brazil, Tapajos, Santarem; and *A. cruentata*, p. 221, pl. 7. fig. 15, Ega.

Tharops. The following new species are described by Butler (*l. c.*):—*T. coruscans*, p. 222, pl. 6. fig. 19, Para; *T. nitida*, p. 223, pl. 6. figs. 20, 21, Brazil; *T. splendida*, p. 224, pl. 6. figs. 24, 25, Para; and *T. hyalina*, p. 225, pl. 6. fig. 26, Ega, Para?

Anatole egaensis, Butler, *l. c.* p. 225, pl. 6. p. 28, Ega; *A. caliginea*, Butl. *l. c.* p. 226, pl. 7. fig. 16, Mexico; and *A. pulcherrima*, Butl. *l. c.* p. 226, pl. 6. fig. 27, Nauta.

Apodemia stalachtioides, Butler, *l. c.* p. 228, pl. 7. fig. 18, Rio de Janeiro.

Symmachia. Hewitson (Exot. Butt. 61, Jan. 1867) describes and figures the following new species of this genus:—From the Amazons—*S. arcuata*, fig. 1, *S. tigrina* (Bates, MS.), fig. 2, *S. calligrapha* (Bates, MS.), fig. 3, *S. norina* (Bates, MS.), fig. 4, *S. tricolor* (Bates, MS.), fig. 6, *S. calliste* (Bates, MS.), fig. 9, *S. hetærina* (Bates, MS.), fig. 10, and *S. pardalis* (not figured); *S. emesia*, fig. 7, Nicaragua; and *S. ocellata*, fig. 8, Venezuela.

Anteros axiochus, Hewitson, Exot. Butt. 63, June 1867, *Anteros*, figs. 1, 2, Brazil; *A. chrysoprasta* (Bates, MS.), Hew. *l. c.* figs. 7, 8, and *A. bracteata* Hew. *l. c.* figs. 11, 12, Amazons.

Emesis aurelia, Bates, *l. c.* p. 544, Maranham.

Nymphidium sylvarum, Bates, *l. c.* p. 545, Vizeu; *N. chione*, Bates, ibid., Maranham and Pará.

Nymphidium azanoides, Butler, Ent. M. Mag. iii. p. 221, Amazons (=*N. azan*, Doubl.); *N. epiplatea*, Butler, *l. c.* p. 222, Pernambuco.

Nymphidia borealis, Grote and Robinson, Ann. Lyc. New York, viii. p. 351, New York.

Theope janus, Bates, *l. c.* p. 546, Maranham.

Dodona eugenes, Bates, Journ. Linn. Soc. ix. Zool. p. 371, Nepaul and Bhotan.

Alesa. Bates (*l. c.*) describes 4 new species of this genus, namely:—*A. lipara*, p. 371, and *A. thelidrias*, ibid., Tapajos; *A. hemiurga*, p. 372, and *A. telephaë* (Boisd.), ibid., Ega.

Mesosemia sylvina, Bates, *l. c.* p. 372, Lower Amazons.

Cremna beltiana, Bates, Trans. Ent. Soc. 3rd ser. v. p. 541, Maranham; *C. hetereea*, Bates, *l. c.* p. 542, Upper Amazons; *C. eucharila*, Bates, *l. c.* p. 543, Amazons (=*actoris*, Hübn. nec Cram.); and *C. melampia*, Bates, ibid., Bahia.

Lycænides.

Butler (Proc. Zool. Soc. 1867, pp. 34-36) remarks upon the synonymy of some species of this group. *Myrina jafra* (God.)=*Hesperia freja* (Fab.); *Hypolycæna tmolus* (Feld.) probably = *erylus* (God.); *H. erylus* (Trim.)

= *philippus* (Fab.); *Amblypodia selimnus* (Doubl.) is represented by specimens of the Ceylonese forms of *Iolaus longinus* (Fab.) and *pseudo-longinus* (Doubl.), which Butler regards, in opposition to Hewitson, as distinct species, and of which he gives characters. Butler figures *Myrina freja* (Fab.), *l. c.* p. 36. fig. 1, and its local form (*jaffra*), fig. 2; also *Iolaus pseudo-longinus* (Doubl.), *l. c.* fig. 3.

Thecla. Hewitson (Ill. Diurn. Lepid. part 3) cites 164 species of this genus, of which a large proportion are described as new. He figures the following known species of the genus:—*T. lincus* (Fab.), var., pl. 33. figs. 50, 51; *T. sito* (Boisd.), pl. 45. figs. 193–195; *T. damon* (Cram.), pl. 37. fig. 100; *T. polibetes* (Cram.), pl. 32. fig. 47; *T. ambrax* (Westw.), pl. 41. fig. 150; *T. erix* (Cram.), pl. 46. figs. 203, 204; *T. tephræus* (Hübn.), pl. 43. figs. 172, 173 (sub nom. *T. faventia*, Hew.); *T. leucophæus* (Hübn.), pl. 39. fig. 125; *T. dindymus* (Cram.), pl. 39. fig. 126; *T. sphinx* (Hübn.), pl. 39. fig. 124; *T. syncellus* (Cram.), pl. 46. figs. 207, 208; and *T. punctum* (H.-Sch.), pl. 40. figs. 132, 133.

Stainton (Brit. Butt. & Moths, pl. 2) figures *Thecla betulæ*, fig. 2, *Chrysophanus phlæas*, fig. 3, and *Polyommatus adonis*, fig. 4.

G. Allard records his capture of 9 species of this group in Algeria (Ann. Soc. Ent. Fr. 4ᵉ sér. vii. pp. 313, 314), and notices particularly *Lycæna psittacus* (which he regards as distinct from *L. balkanica*, and believes to feed on *Zizyphus vulgaris*), *L. adonis*, *L. martinii*, *L. melanops*, and *Thecla lynceus*.

Lycæna argus (Linn.). Millière describes and figures a variety of the ♀ of this species. (Ann. Soc. Linn. Lyon, xiv. p. 319, pl. 73. figs. 4–5.)

Thecla rubi. A variety noticed by Piffard. Ent. M. Mag. iv. p. 35.

Lycæna alsus. E. Gedge notices the habits of this species. Its larva feeds in the flower-heads of *Anthyllis vulneraria*. Ent. M. Mag. iii. p. 205.

Lycæna pseudargiolus (Boisd. & Lec.) is described in detail by W. H. Edwards, Proc. Ent. Soc. Phil. vi. p. 204.

Lycæna medon (Hufn.) = *Polyommatus agestis* (Ochs.). Zeller (Ent. M. Mag. iv. pp. 73–77) describes the natural history and development of this species at some length.

Lycæna bætica. Life-history described by Newman, Entomologist, iii. p. 220.

Guenée describes some peculiar organs possessed by the larva of *Lycæna bætica* (Ann. Soc. Ent. Fr. 4ᵉ sér. vii. pp. 665–668). On each side of the eleventh segment, close to the ninth spiracle there is a small aperture from which the larva, when disquieted, can protrude a short slightly pyriform organ, furnished at the extremity with a number of fine fleshy filaments like setæ, which when fully extended, radiate from the summit of the organ. On the back of the tenth segment there is a single transverse aperture; and from this a transparent hemispherical vesicle can be protruded. From this vesicle a fluid is exuded in considerable quantity. The author compares these organs with the fork protruded by the larvæ of *Papilio*, but does not attempt any explanation of their functions. They are figured *l. c.* pl. 13. figs. 9–12.

New species:—

Lycæna violacea, Edwards, Proc. Ent. Soc. Phil. vi. p. 201, Eastern States; *L. mertila*, Edwards, *l. c.* p. 206, California.—*Lycæna nigrescens*, A. Dubois, Arch. Cosmol. 1867, p. 259, pl. 12. figs. 1 & 2, Luchon.—*Lycæna martini*,

G. Allard, Ann. Soc. Ent. Fr. 4. sér. vii. p. 319, pl. 6. fig. 2, Algeria.—*Lycæna lucifera* (Kinderm. MS.), Staudinger, Stett. ent. Zeit. 1867, p. 100, Altai.—*Lycæna hypoleuca*, Prittwitz, Stett. ent. Zeit. 1867, p. 273, New South Wales.

Acrophthalmia? diophthalma, Prittwitz, *l. c.* p. 274, Fiji Islands; *A.? argentina*, Pritt. ibid., Samoa.

Chrysophanus rubidus, Behr, Proc. Ent. Soc. Phil. vi. p. 208, Oregon.

Chrysophanus feredayi, Bates, Ent. M. Mag. iv. p. 53, New Zealand.

Thecla lorata, Grote & Robinson, Trans. Am. Ent. Soc. i. p. 171, Virginia; *T. henrici*, Grote & Rob. *l. c.* p. 174, Maine to Pennsylvania.

Thecla. Hewitson (Ill. Diurn. Lepid. part 3) describes the following new species of this genus:—*T. laudonia*, p. 77, pl. 45. figs. 191, 192, *T. cosa*, p. 78, pl. 31. fig. 38, *T. torfrida*, ibid., pl. 31. figs. 34, 35, *T. mazurka*, p. 79, pl. 31. fig. 33, *T. atesa*, ibid., pl. 31. figs. 31, 32, Amazons; *T. desdemona*, ibid., pl. 45. fig. 189, 190, Guatemala; *T. monica*, p. 80, pl. 32. figs. 39, 40, Venezuela; *T. undulata*, p. 81, pl. 32. figs. 41, 42, *T. auda*, ibid., pl. 35. figs. 78, 79, *T. sala*, ibid., pl. 35. figs. 71, 72, *T. aholiba*, p. 82, pl. 35. figs. 76, 77, New Granada; *T. ahola*, ibid., pl. 35. figs. 73, 74, Mexico and New Granada; *T. tema*, ibid., pl. 35. fig. 75, Amazons; *T. gigantea*, p. 83, pl. 32. figs. 43, 44, Pará; *T. thara*, ibid., pl. 32. figs. 45, 46, Rio de Janeiro; *T. erybathis*, p. 84, pl. 34. figs. 58, 59, Mexico; *T. phydela*, ibid., pl. 33. figs. 54–56, Rio de Janeiro; *T. gibberosa*, p. 85, pl. 33. figs. 48, 49, New Granada; *T. togarna*, ibid., pl. 33. figs. 52, 53, Venezuela; *T. æthesa* (Boisd. MS.), p. 86, pl. 33. fig. 57, Bahia; *T. pedusa*, p. 87, pl. 34. figs. 60, 61, Amazons; *T. azaria*, ibid., pl. 34. figs. 65, 66, origin not stated; *T. jada*, ibid., pl. 34. figs. 67, 68, Mexico; *T. ellida*, p. 88, pl. 34. figs. 62–64, Venezuela; *T. malina*, ibid., pl. 34. figs. 69, 70, Brazil; *T. thordesa*, p. 89, pl. 35. fig. 80, *T. mulucha*, ibid., pl. 38. fig. 117, Venezuela; *T. ira*, ibid., pl. 35. figs. 81, 82, Mexico; *T. silumena*, p. 90, pl. 45. figs. 196, 197, origin not stated; *T. neora*, ibid., pl. 38. fig. 110, Guatemala; *T. minyia*, p. 91, pl. 38. figs. 115, 116, *T. rocena*, ibid., pl. 37. figs. 96, 97, *T. atena*, p. 92, pl. 36. fig. 93 & pl. 37. fig. 101, *T. sista*, ibid., pl. 37. figs. 98, 99, *T. athymbra*, ibid., pl. 36. figs. 91, 92, from the Amazons; *T. malvina*, p. 93, pl. 37. figs. 102, 103, Rio de Janeiro; *T. janthina*, ibid., pl. 37. figs. 104, 105, Vera Paz; *T. myrtea*, ibid., pl. 38. fig. 112, *T. mutina*, p. 94, pl. 38. figs. 113, 114, *T. mecrida*, ibid., pl. 38. figs. 108, 109, Amazons; *T. spinetorum* (Boisd. MS.), p. 94, pl. 45. figs. 198, 199, California; *T. myrtusa*, p. 95, pl. 38. fig. 111, Amazons; *T. malvania*, ibid., pl. 38. figs. 106, 107, origin not stated; *T. metanira*, ibid., pl. 46. figs. 200, 201, *T. avoca*, p. 96, pl. 37. figs. 94, 95, *T. falerina*, ibid., pl. 43. figs. 168, 169, *T. olbia*, p. 97, pl. 36. figs. 85, 86, and var. (*T. phallica*), pl. 40. fig. 136, *T. comana*, ibid., pl. 36. figs. 86, 87, *T. thalesa*, p. 98, pl. 45. fig. 200, Amazons; *T. thyrea* (Boisd. MS.), p. 99, pl. 36. figs. 83, 84, Cayenne and Amazons; *T. sylea*, ibid., pl. 39. figs. 118, 119, *T. phænissa*, p. 100, pl. 40. figs. 139, 140, Amazons; *T. elika*, p. 101, pl. 41. figs. 143, 144, Rio Grande; *T. acameda*, ibid., pl. 41. figs. 151, 152, Pará; *T. orgia* (Boisd. MS.), p. 102, pl. 41. figs. 148, 149 & pl. 43. fig. 176, Venezuela and Cayenne; *T. spurina*, ibid., pl. 39. figs. 122, 123, *T. orobia*, p. 103, pl. 40. figs. 134, 135, *T. orobiana*, ibid., pl. 46. figs. 205, 206, Amazons; *T. erema*, p. 104, pl. 44. figs. 179, 180, Guatemala; *T. hebræus* (Boisd. MS.), ibid., pl. 43. figs. 165, 166, Bahia; *T. cricetа*, ibid., pl. 44. figs. 177, 178, Guatemala; *T. aphaca*, p. 105, pl. 36.

fig. 90, Brazil; *T. daraba*, ibid., pl. 36. fig. 89, Amazons; *T. ergina*, ibid., pl. 40. figs. 170, 171, Jamaica; *T. empusa*, p. 106, pl. 42. figs. 158, 159, Amazons; *T. stilbia*, p. 107, pl. 39. fig. 127, origin not stated; *T. syedra*, p. 108, pl. 39. figs. 128, 129, and pl. 41. fig. 145, Amazons; *T. enenia*, ibid., pl. 41. figs. 146, 147, origin not stated; *T. eribæa*, ibid., pl. 42. figs. 154, 155, Amazons; *T. echelta*, p. 109, pl. 44. figs. 187, 188, *T. ophelia*, p. 110, pl. 46. figs. 209, 210, Amazons; *T. ostia*, ibid., pl. 40. figs. 130, 131, Rio de Janeiro; *T. genena*, p. 111, pl. 44. figs. 185, 186, *T. endera*, ibid., pl. 42. figs. 156, 157, *T. emessa*, ibid., pl. 42. figs. 160, 161, Amazons; *T. eliatha*, p. 112, pl. 41. figs. 141, 142, Brazil; *T. perola*, ibid., pl. 40. figs. 137, 138, & pl. 46. figs. 211. 212, Amazons; *T. fidena*, ibid., pl. 44. figs. 183, 184, origin not stated; *T. gadira*, p. 113, pl. 44. figs. 181, 182, Guatemala; *T. stagira*, ibid., pl. 39. figs. 120, 121, and pl. 43. fig. 167, and var. (*T. erenea*), pl. 42. figs. 163, 164, Amazons and Rio de Janeiro; *T. ericusa*, ibid., pl. 42. fig. 162, Brazil; *T. eretria*, p. 114, pl. 42. fig. 153, North China; and *T. dinus* (Boisd. MS.), ibid., pl. 43. figs. 174, 175.

Hesperiides.

C. & R. Felder (Reise der Novara, Zool. ii. Lep. Heft 3) figure the following species previously described by them:—*Tamyris antias*, pl. 70. fig. 4; *Oxynetra semihyalina*, pl. 70. fig. 9, *Chatocneme cerinthus*, pl. 73. fig. 1; *C. corvus*, pl. 73. fig. 2; *Hesperia fortunei*, pl. 72. fig. 11; *H. angiades*, pl. 72. fig. 5; *Isoteinon lamprospilus*, pl. 74. fig. 20, *I. vittatus*, pl. 74. fig. 21; *Carterocephalus exornatus*, pl. 74. figs. 18 & 19; *Phareas priscus*, pl. 73. fig. 6; *Ismene discolor*, pl. 72. fig. 17; *I. doleschallii*, pl. 72. fig. 16; *I. malayana*, pl. 72. fig. 15; *Pterygospidea trichonevra*, pl. 73. figs. 14 & 15, and *P. angulata*, pl. 73. figs. 10 & 11.

Ismene vasutana and *I. jania* (Moore) are figured by Hewitson, Exot. Butt. 62, April 1867, *Ismene*, pl. 2. figs. 8 & 9 and 12 & 13.

Hesperia fischeri (Latr.) is figured by Hewitson, Exot. Butt. 62, April 1867, *Hesp.* pl. 1. figs. 8–10.

Stainton figures *Thymele alveolus* (Brit. Butt. Moths, pl. 2. fig. 5).

G. Allard (Ann. Soc. Ent. Fr. 4e sér. vii. p. 315) cites 4 Algerian species of this group.

Netrocoryne, g. n., Felder, *l. c.* p. 507. Allied to *Thracis*; antennæ longer, very slender, club abrupt, fusiform, hooked; palpi much longer, pilose back and front; veins much more distant, discoidal cells much broader, superior discoidal vein in anterior emitted from angle of cell. Sp. *N. repanda*, sp. n., Feld. *l. c.* p. 507, pl. 70. fig. 10, Moreton Bay.

New species:—

Tamyris strigifera *, Felder, *l. c.* p. 505, pl. 70. figs. 7 & 8, Venezuela, Bogotá; *T. hygieia*, Feld. *l. c.* p. 506, pl. 70. fig. 1, *T. agathon* †, Feld. ibid., pl. 70. figs. 2 & 3, and *T. pardalina*, Feld. *l. c.* p. 507, pl. 70. figs. 5 & 6, Bogotá.

Eudamus. C. & R. Felder (*l. c.*) describe the following new species of this genus:—*E. alector*, p. 508, pl. 71. figs. 2 & 3, and *E. harpagus*, ibid., pl. 70. figs. 11 & 12, Bogotá; *E. sebress*, p. 509, pl. 71. fig. 1, Bahia; *E. tamyroides*,

* Identical with *Pyrrhopyga galgala* (Hew.).
† Identical with *Pyrrhopyga maculosa* (Hew.).

ibid., pl. 70. figs. 13 & 14, Amazons, South Brazil; *E. orcinus*, p. 510, pl. 71. figs. 4 & 5, Bahia; *E. extrusus*, ibid., pl. 72. figs. 13 & 14, Aru; and *E. formosus*, p. 511, pl. 71. figs. 6 & 7, origin unknown.

Pyrrhopyga. Of this genus Hewitson describes the following new species (Ent. Trans. 3rd ser. ii.):—*P. azeta*, p. 479, *P. ahira*, ibid., *P. zonara*, p. 480, *P. aspitha*, p. 481, *P. thelersa*, ibid., *P. pedaia*, ibid., *P. hadora*, p. 482, *P. passova*, ibid., *P. gazera*, ibid., and *P. gortyna*, p. 483, from the Amazons (*P. passova* also from Cayenne); *P. aziza*, p. 483, New Granada; *P. garata*, ibid., Surinam; *P. galgala*, ibid., Venezuela; *P. zereda*, p. 484, Ecuador; *P. maculosa*, p. 485, Bogotá; and *P. oneka*, p. 480, *P. hadassa* and *P. telassa*, p. 484, origin not stated.

Erycides telmela, Hewitson, *l. c.* p. 485, and *E. thrasea*, Hew. ibid., from the Amazons.—*Erycides phoronis*, Hewitson, New Hesp. p. 1, and *E. amystis*, Hew. ibid., New Granada; *E. araxes*, Hew. *l. c.* p. 2, Mexico.

Eudamus. Hewitson (New Hesp. pp. 3–21) describes 37 new species of this genus, in which he includes *Goniurus* and *Goniloba* (Westw.). As the author considers these descriptions "unaided by figures more than worthless," it is manifestly unnecessary to cite them here, as they will again come under our notice when figured, as promised, in the 'Exotic Butterflies.'

Chætocneme caristus, Hewitson, *l. c.* p. 21, Aru; *C. callixenus*, Hew. ibid., Dorey.

Netrocoryne beata and *N. denitza*, Hewitson, *l. c.* p. 22, Australia.

Hesperia eudega, Hewitson, *l.c.* p. 23, Amazons; *H. hyela*, Hew. ibid., Java; *H. hyrmina*, Hew. *l. c.* p. 24, Tondano and Macassar; *H. aroma* and *H. bræsia*, Hew. ibid., Para; and *H. cynaxa*, Hew. *l. c.* p. 25, Mexico.

Hesperia. Hewitson (Ent. Trans. 3rd ser. ii.) describes the following new species of this genus:—*H. egita*, p. 486, *H. anchora*, p. 487, *H. belistida*, p. 491, *H. bursa*, ibid., *H. calvina*, p. 492, *H. rona*, p. 490, and *H. amana*, ibid., from Para; *H. catina*, p. 492, and *H. noseda*, p. 500, from the Tapajos; *H. coryna*, p. 494, and *H. phaetusa*, 497, from the Amazons; *H. æstria*, p. 486, *H. ceraca*, p. 488, *H. ethoda*, p. 389, *H. lutetia*, p. 495, *H. peræa*, p. 496, *H. physcella*, p. 498, from Rio de Janeiro; *H. argentea*, p. 487, Guatemala; *H. chalestra*, p. 488, Minas Geraës; *H. certima*, p. 493, *H. colenda*, ibid., *H. crotona*, ibid., and *H. litana*, p. 494, Venezuela; *H. ovinia*, p. 496, Nicaragua; *H. cunaxa*, p. 488, North America; *H. elia*, p. 489, *H. barea*, p. 490, *H. marsena*, p. 498, *H. ogygia*, p. 500, and *H. phiditia*, p. 501, from Sumatra; *H. attina*, p. 489, India and Java; *H. azona*, p. 490, and *H. tessellata*, p. 494, Macassar; *H. cæsina*, p. 491, Waigiou; *H. sala*, p. 500, Singapore; *H. cathæa*, p. 492, *H. opigena*, p. 495, *H. ophiusa*, p. 497, *H. memuca*, ibid., and *H. almoda*, p. 499, origin not stated.

Hesperia. Hewitson (Exot. Butt. 62, April 1867, *Hesp.* pl. 1) describes and figures the following new species:—*H. adela*, figs. 1–3, Rio de Janeiro; *H. nanea*, figs. 4 & 5, Maranham; and *H. gerasa*, figs. 6 & 7, Maranham. Also (Exot. Butt. 64, Oct. 1867, *Hesp.* pl. 2) *H. cilissa*, figs. 11 & 14, *H. cincia*, figs. 12 & 13, and *H. chiomara*, fig. 19, from the Amazons; *H. cænira*, figs. 15 & 16, and *H. cerymica*, figs. 20 & 21, Old Calabar; and *H. cæsena*, figs. 17 & 18, Brazil.

Hesperia ernesti, Grandidier, Rev. et Mag. de Zool. 1867, p. 274, Madagascar.

Hesperia punctella, Grote & Robinson, Trans. Amer. Ent. Soc. i. p. 1,

Georgia; *H. fusca*, Grote & Rob. *l. c.* p. 2, Georgia and Florida; *H. alternata*, Grote & Rob. *l. c.* p. 3, Georgia.

Hesperia ottoe, Edwards, Proc. Ent. Soc. Phil. vi. p. 207, Kansas; *H. mingo*, Edw. ibid., Virginia; *H. yerka*, Edw. ibid., San Francisco.

Hesperia. C. & R. Felder (*l. c.*) describe the following new species of this genus:—*H. latreillii*, p. 511, pl. 71. fig. 8, Java; *H. celsina*, p. 512, pl. 71. fig. 12, Celebes; *H. ismene*, ibid., pl. 73. figs. 4 & 5, Celebes; *M. callineura*, p. 513, pl. 71. figs. 9 & 10, Java; *H. vulpina*, p. 514, pl. 72. figs. 1 & 2, Bogotá; *H. lindigiana* *, ibid., pl. 72. figs. 3 & 4, Venezuela, Bogotá; *H. boisduvalii*, ibid., pl. 71. fig. 11, Amboyna; *H. ornata*, p. 515, pl. 72. fig. 6, Java; *H. antalcidas*, ibid., pl. 72. fig. 10, Celebes; *H. fractifascia*, p. 516, pl. 71. figs. 15 & 16, Bogotá; *H. viridicans*, ibid., pl. 71. figs. 13 & 14, Bogotá; *H. flavescens*, p. 517, pl. 72. figs. 7–9, Celebes; *H. eulepis*†, ibid., pl. 72. fig. 12, Celebes; *H. psittacina*, p. 518, pl. 71. figs. 17 & 18, Bogotá; *H. catargyra*, p. 519, pl. 71. fig. 19, Venezuela; and *H. plumbeola*, ibid., pl. 71. fig. 20, Luzon.

Ancyloxypha gracilis, Felder, *l. c.* p. 520, pl. 74. fig. 28, and *A. melanoneura*, Feld. ibid., pl. 74. figs. 29 & 30, Bogotá.

Carterocephalus. C. & R. Felder (*l. c.*) describe the following new species of this genus:—*C. agathocles*, p. 521, pl. 74. figs. 16 & 17, *C. cypselus*, p. 522, pl. 74. fig. 11, *C. dimidiatus*, ibid., pl. 74. figs. 7 & 8, *C. polycrates*, ibid., pl. 74. figs. 12 & 13, *C. epiphaneus*, p. 523, pl. 74. figs. 9 & 10, and *C. hesperioides*, ibid., pl. 74. figs. 14 & 15, Bogotá.

Leucochitonea unifasciata, Felder, *l. c.* p. 524, pl. 74. fig. 22, Bogotá; *L. stigma*, Feld. ibid., pl. 74. figs. 26 & 27, Santa Martha; *L. salléi*, Feld. p. 525, pl. 74. fig. 25, Mexico; and *L. cronion*, Feld. p. 525, pl. 74. figs. 23 & 24, Brazil.

Ismene septentrionis, Felder, *l. c.* p. 525, pl. 73. fig. 3, Shanghai; *I. subcaudata*, Feld. *l. c.* p. 526, pl. 72. figs. 20 & 21, Java; and *I. gentiana*, Feld. *l. c.* p. 527, pl. 72. figs. 18 & 19, Luzon.

Ismene. Hewitson (Exot. Butt. 61, Jan. 1867) describes and figures the following new species:—*I. pansa*, figs. 1 & 2, Madagascar; *I. myra*, fig. 3, Java; *I. chuza*, fig. 4, Sarawak; *I. saida*, fig. 5, Philippine Islands; and *I. striata*, figs. 6 & 7, China. Also (Exot. Butt. 62, April 1867, *Ismene*, pl. 2) *I. iluska*, figs. 10 & 11, Macassar; and *I. etelka*, figs. 14 & 15, Sarawak.

Pterygospidea. C. & R. Felder (*l. c.*) describe the following new species of this genus:—*P. celebica*, p. 528, pl. 73. fig. 8, Celebes; *P. maculosa*, ibid., pl. 73. fig. 7, Shanghai; *P. helias*, p. 529, pl. 73. figs. 12 & 13, Celebes; *P. erosula*, ibid., pl. 73. fig. 3, Celebes; and *P. syrichthus*, p. 530, pl. 72. figs. 22 & 23, Java.

Helias. C. & R. Felder (*l. c.*) describe the following new species of this genus:—*H. mexicana*, p. 531, pl. 73. fig. 20, Mexico; *H. albiplaga*, ibid., pl. 73. figs. 18 & 19, and *H. hæmatospila*, p. 532, pl. 73. figs. 16 & 17, Venezuela, Bogotá; *H. noctua*, p. 533, pl. 74. figs. 1 & 2, Bogotá; *H. geometrina*, p. 534, pl. 74. fig. 5, Venezuela, Bogotá; *H. satyrus*, ibid., pl. 74. figs. 3 & 4, Bogotá; and *H. satyrina*, p. 535, pl. 74. fig. 6, Venezuela, Bogotá.

Syrichtus alba, Edwards, Proc. Ent. Soc. Phil. vi. p. 206, Arizona.

Sphingidæ.

Grote & Robinson (Ann. Lyc. New York, viii. pp. 353–356) remark on

* Identical with *H. colenda* (Hew.).
† Identical with *H. tessellata* (Hew.).

the synonymy of various Insects of this family. *Sphinx convolvuli* and *S. ligustri* they regard as belonging to different genera, and propose to apply to the former Boisduval's name *Macrosila*. *S. ligustri* they regard as the highest and most typical form of the restricted genus *Sphinx*. A new arrangement of the genera of Sphingini is proposed by the authors. Commencing with *Ceratomia* as most nearly allied to the Smerinthini, followed by *Cerat. serpentinus* (Clemens), for which the authors retain Walker's name *Daremma*, then follow *Syzygia* and *Diludia* (Grote & Rob.), *Pseudosphinx* (Burm.), *Amphonyx* (Poey), *Macrosila* (Boisd.), and *Sphinx*. The generic name *Erinnyis* (Hübn.) is manifestly identical with *Erynnis* (Schrank); and the authors propose to adopt Burmeister's name *Dilophonota* for the genus, as being employed strictly for Hübner's group, whereas *Anceryx* (Boisd.) includes other species. A list of 14 species of this genus is given.

Herrich-Schäffer (Corr.-Blatt zool.-min. Ver. Regensb. xx. pp. 59–64) notices and criticises various recent publications on this family. He refers especially to Grote's remarks on the Sphingidæ of Cuba (see Record, 1866, pp. 437 & 473), but seems to have misunderstood Grote's remarks upon *Enyo gorgon* (Cram.), which he charges that writer with referring to *E. lugubris*. *Erinnyis cinerosa* (Grote)=*stheno* (Hübn.).

Stainton (Brit. Butt. & Moths, pl. 3) figures *Smerinthus tiliæ* (fig. 3), *Macroglossa stellatarum* (fig. 4), and *Sesia bombyliformis* (fig. 5).

Deilephila nerii (Linn.). Kawall records the occurrence of this species in Courland in 1866, and refers to previous indications of its visiting that district. Berl. ent. Zeitschr. 1867, pp. 193, 194.

Deilephila lineata and *Macroglossa fuciformis* are noticed as Algerian species by G. Allard. Ann. Soc. Ent. Fr. 4e sér. vii. p. 315.

Deilephila livornica. The capture of this species in various parts of England noticed by Barrett, Barlow, and Pole, and in Ireland by Pasley. Ent. M. Mag. iv. p. 12.

Landois (Zeitsch. für wiss. Zool. xvii. pp. 159–163) discusses the means by which *Acherontia atropos* produces its characteristic squeaking sound. He returns to the opinion of Réaumur, that the sound is caused by the friction of the palpi against the sides of the trunk, and states that the basal portion of the inner surface of the palpi is naked and covered with exceedingly fine ribs. He notices several other species (*S. convolvuli, ligustri, elpenor, pinastri, euphorbiæ*, and *tiliæ*) as having similar ribs on the inner surface of the palpi; but these are weaker than in *Acherontia atropos*, and the sound produced by their friction is either almost or quite imperceptible by the ear.

Acherontia atropos. Capronnier publishes a note on the sounds produced by this insect. He heard the larva emit a slight, sharp sound when the branch on which it was seated was touched, and on examination came to the conclusion that the sound was produced by the mandibles (?). In support of the opinion that the squeak of the imago proceeds from organs of the head, he mentions that a specimen which emerged with the head imperfect and the organs of the mouth atrophied emitted no sound. Ann. Soc. Ent. Belg. x. Comptes Rendus, pp. xvi, xvii.

Girard notices the production of a musky odour by the males of *Sphinx ligustri* and *convolvuli*. Bull. Soc. Ent. Fr. 1867, p. xlvii.

Acherontia atropos. A specimen with only a single antenna. Westwood, Proc. Ent. Soc. 1865, p. 124.

Taschenberg (Zeitschr. ges. Naturw. xxix. p. 154, pl. 6) describes and figures a supposed monstrosity of a Hawkmoth, having the body and fore wings of *Sphinx ligustri*, and in place of the hind wings both pairs of *S. galii*. According to a later communication from Häckel (*l. c.* p. 498), the specimen is an artificial combination.

Macroglossa stellatarum. The habit of this species of flying along walls &c. is discussed by M'Lachlan, Bond, and Wallace. Proc. Ent. Soc. 1866 and 1867, pp. xlix & lx. Bond considers its object to be the finding of some place of concealment—which is confirmed by Wallace.

Smerinthus ocellatus. Gedge found that the ♀ of this species laid 351 eggs and still retained 38; total 389. Ent. M. Mag. iii. p. 206.

Deilephila dahlii (Tr.). Mabille remarks on the habits of this insect, the larvæ of which feed on species of *Euphorbia*. Ann. Soc. Ent. Fr. 4e sér. vi. p. 557.

A. Gouley records the finding of the larvæ of various species of the genus *Deilephila* upon the leaves of the Fuchsia. Bull. Soc. Ent. Fr. 1866, p. lxvi.

G. Semper (Verh. zool.-bot. Ges. in Wien, xvii. pp. 699, 700) indicates the characters of the larvæ of *Macrosila discistriga* (Walk.), *Panacra vigil* (Guér.), and *P. scapularis* (Walk.), *Pergesa actæus* (Cram.), *Chærocampa celerio* (Linn.), *C. alecto* (Linn.), *C. clotho* (Drury), and *C. oldenlandiæ* (Fab.). The larva and pupa of the first-named species and those of *C. clotho* are figured (*l. c.* pl. 23. figs. 2 & 3).

New species:—

Chærocampa lævis, Grote & Robinson, Ann. Lyc. New York, viii. p. 356, pl. 14. fig. 1, Mexico; *C. ceratomioides*, Grote & Rob. *l. c.* p. 358, pl. 14. fig. 2, Mexico.

Minetra tigrina, Vollenhoven, Tijdschr. v. Ent. 2de ser. i. p. 210, pl. 10. fig. 2, Salwatty.

Zygænidæ.

Grote discusses the characters of this family and describes some of the Cuban species (Proc. Ent. Soc. Phil. vi. pp. 173–188). He inclines to place at the head of the subfamily Zygæninæ (Pack.) the narrow species with vitreous wings which simulate the Sesioid type. The basal segment of the abdomen in all the genera is swelled laterally, and in some this swelling is very prominent; the protuberance assumes a valvular form, being separated from the crust of the body beneath, and has been compared by Guérin to the pouches of the Cicadæ. Grote says this character is common to both sexes, and he is inclined to give it importance in the characters of the genera. *Phyllœcia* (Guér.) and *Mastigocera* (Harr.) = *Horama* (Hübn.), which is characterized (*l. c.* p. 180), as is *Eunomia* of the same author (*l. c.* p. 187).

Grote (Proc. Ent. Soc. Phil. vi. pp. 324–327) also discusses the systematic arrangement of the genera of this group.

Burtia rubella (Grote) = *Gundlachia cruenta* (H.-Sch.) is figured by Grote, Proc. Ent. Soc. Phil. vi. pl. 5. fig. 1, as also:—*Horama diffissa* (Grote) = *H. pretellus* (H.-Sch.), *l. c.* pl. 5. fig. 2; *Callicarus pennipes* (Grote) = *Horama*

plumosa (H.-Sch.), *l. c.* pl. 5. fig. 3; *Eunomia insularis* (Grote)=*Glaucopis elegantula* (H.-Sch.), pl. 5. fig. 4; and *Formicaulus pygmæus* (Grote), *l. c.* pl. 5. fig. 5. *Heterandra disparilis* (H.-Sch.)=*Euschirrhopterus poeyi* (Grote).

Grote & Robinson (Ann. Lyc. New York, viii. p. 364) remark upon the characters of the genus *Thyris* (Ill.), from which they separate a new genus, *Platythyris*, and propose to establish a family, *Thyridæ*, for *Thyris* and its allies. They remark that *Thyris*, the highest genus, imitates the Sesiidæ, whilst *Platythyris*, the lowest, resembles the lower Castniid genera *Alypia* and *Eudryas*. The two genera are types of subfamilies, the *Thyrini* and *Platythyrini*. *Thyris lugubris* (Boisd.) will probably form a new genus lower still than *Platythyris*.

Syntomina. Of the genera belonging to this group, which he regards as only artificially separated from the *Arctiidæ*, Herrich-Schäffer gives the following table (Corr.-Blatt zool.-min. Ver. Regensb. xx. pp. 107–108) :—

I. Subcostal of hind wings occupying the anterior margin; costal wanting. 1. *Gundlachia.*

II. Subcostal of hind wings distant from the anterior margin, which is not thickened.

1. Subcostal of hind wings continued as a branch.

A. Hind wings with 6 veins, 4 and 5 stalked .... 2. *Automolis.*

B. Hind wings with 6 veins, 4 and 5 from one point. 3. *Naclia.*

C. Hind wings with 5 veins.

a. Veins 4 and 5 from one point ..... 4. *Syntomis.*

b. Veins 4 and 5 separate ..... 5. *Cœnochromia.*

2. Subcostal of hind wings forks into two branches, or veins 6 and 7 separate.

A. Veins 2 and 3 of hind wings forked only near the margin, or reduced to one vein.

a. Vein 5 weak or wanting, often indicated only by the fold.

α. Abdomen pedunculated.

* Hind wing without median cell; fore wing 7 : 8+9, 10. 6. *Abrochia.*

† Hind wing with median cell; fore wing 7 : 8, 9, 10. 7. *Pseudosphex.*

β. Abdomen with a broad base.

* Hind tibiæ with only apical spurs; 7 : 8+9, 10. 8. *Hyalopis.*

† Hind tibiæ also with middle spurs.

a. Hind tibiæ spoon-shaped at the end; 4+5, 7 : 8, 9, 10. 9. *Mystrocneme.*

b. Hind tibiæ and tarsi widened by projecting scales.

– Antennæ clavate at apex; 7 : 8+9..10. *Horamia.*

= Antennæ pectinate to the apex; 7 : 8+9, 10. 11. *Copæna.*

c. Hind tibiæ normal.....12. *Glaucopis.*

b. Vein 5 as strong as the rest, springing from the median cell before the fold.

a. Vein 2 of hind wing entirely wanting.

* Veins 3 and 4 from one point; 6 distant from 7 in ♂, stalked in ♀ ..... 13. *Amycles.*

† Veins 3 and 4 distant; 6+7 in both sexes. 14. *Autochloris.*

β. Vein 2+3 with a long stalk ..... 15. *Empyreuma.*

B. Vein 2 further from 3 than 3 from 4 ..... 16. *Saurita.*

a. Vein 5 wanting.

* Abdomen pedunculate; wings limpid; 7 : 8, 9, 10. 17. *Eumenogaster.*

† Abdomen broadly sessile; fore wings 7 : 8+9, 10.

a. Wings limpid, with a dark border.... 18. *Chrysostola.*

b. Wings coloured ..... 19. *Echeta.*

b. Vein 5 as strong as the rest.

a. The four spurs of hind tibiæ small and nearly equal.

* Anus without peculiarity.

a. Veins 2 and 3 of fore wings stalked, 7 in the black margin. 20. *Gnophæla.*

b. Veins 4 and 5 of fore wings stalked, of hind wings at least from one point ..... 21. *Correbia.*

c. Veins 4 and 5 of fore wings separated, or from one point.

– In the fore wings 7 : 8, 9, 10..... 22. *Ctenucha:*

= In the fore wings 7 : 8+9, 10 .... 23. *Charidea.*

d. Veins 2–5 of hind wings at equal distances. 24. *Euclera.*

† Anus of ♀ with a long seta; fore wings 7 : 8, 9, 10. 25. *Cercophora.*

‡ Anus truncated, with a brush of hairs .. 26. *Hæmaterion.*

β. Middle spurs of hind tibiæ twice as long as posterior; veins 3–5 of hind wings from one point ..... 27. *Trichæa.*

Herrich-Schäffer also remarks (*l. c.* pp. 103–105 and 113–117) upon many described species of this family from Cuba. He criticises Walker's catalogue severely.

Stainton (Brit. Butt. & Moths, pl. 3) figures *Procris globulariæ* (fig. 1) and *Anthrocera filipendulæ* (fig. 2).

G. Allard (Ann. Soc. Ent. Fr. 4e sér. vii. p. 316) notices 7 species of this family found by him in Algeria, and remarks especially upon the characters of one which he identifies with *Z. faustina.*

Naclia ancilla (Linn.). On the characters of this species and its occurrence in Britain, see Newman, Entomologist, iii. pp. 238–239.

New genera:—

Scirocastnia, g.n., Grote, Proc. Ent. Soc. Phil. vi. p. 175. Allied to *Alypia*; labial palpi erect, curved, and pressed against the front, pilose, joint 3 obtuse and rather short; wings very ample, angles rounded; fore wings with median veins 1–3 approximate and equidistant at base, and costal veins more aggregated than in *Alypia*; legs stout, spinose, tibial spurs very long on hind legs. Sp. *Ephialtias tribuna* (Hübn.).

Euschirrhopterus, g. n., Grote, *l. c.* p. 176. Allied to *Eudryas*; head very large; palpi loosely haired, horizontal, joint 3 minute; abdomen without tufts; legs stout, spinose. Sp. *E. poeyi*, sp. n., Grote, *l. c.* p. 178, Cuba.

Callicarus, g. n., Grote, *l. c.* p. 182. Allied to *Horama* (Hübn.); antennæ subserrate, gradually swelled to tips, which are slender and flexuous; head smaller and prothoracic pieces narrower than in *Horama*. Sp. *Sphinx plumipes* (Drury); *Callicarus pennipes*, sp. n., Grote, *l. c.* p. 182, pl. 5. fig. 3, Cuba; *C. texanus*, sp. n., Grote, *l. c.* p. 184, Texas (=*Euchromia plumipes*, Clemens nec Drury).

Formiculus, g. n., Grote, *l. c.* p. 184. Allied to preceding; antennæ subcapitate, serrated and short; labial palpi 0?; posterior tibiæ without spurs; veins of fore wings straight, equidistant, forming a linear cell below the median cell. Sp. *F. pygmæus*, sp. n., Grote, *l. c.* p. 185, pl. 8. fig. 4, Cuba.

Burtia, g. n., Grote, *l. c.* p. 185. Allied to *Eunomia* (Hübn.); body linear; palpi small, hardly exceeding the front. Sp. *B. rubella*, sp. n., Grote, *l. c.* p. 186, pl. 5. fig. 1, Cuba.

Sphæromachia, g. n., Grote, *l. c.* p. 304. Allied to *Pericopis*; fore wings triangular, apical margin very straight. Sp. *Pericopis cubana* (H.-Sch.).

Platythyris, g. n., Grote & Robinson, Ann. Lyc. New York, viii. p. 361. Allied to *Thyris*; antennæ long, slender, filiform; head not prominent; palpi large, free; prothorax broad and square in front; wings broad, posterior with sinuate margins. Sp. *Thyris vitrina* (Boisd.); *P. fasciata*, sp. n., Grote & Rob. *l. c.* p. 362, pl. 13. figs. 4 & 5, Virginia.

Trichæa, g. n., Herrich-Schäffer, *l. c.* p. 115. (See Table, p. 377). Sp. *T. pilicornis* and *T. scticornis*, spp. nn., H.-Sch. *l. c.* p. 115, Cuba.

New species :—

Zygæna crebus, Staudinger, Stett. ent. Zeit. 1867, p. 101, South Russia.

Setiodes nana, Herrich-Schäffer, *l. c.* p. 106, Cuba.

Gundlachia cruenta, Herrich-Schäffer, *l. c.* p. 108, Cuba.

Horamia pretellus and *H. plumosa*, Herrich-Schäffer, *l. c.* p. 113, Cuba.

Horama diffissa, sp. n., Grote, *l. c.* p. 181, pl. 5. fig. 2, Cuba.

Eunomia insularis, Grote, *l. c.* p. 188, pl. 5. fig. 5, Cuba.

Hippola minima, Grote, *l. c.* p. 298, pl. 5. fig. 6, Cuba.

Apistosia humeralis, Grote, *l. c.* p. 302, Cuba (=*A. judas*, H.-Sch. nec Hübn.).

Melanchroia fumosa, Grote, *l. c.* p. 306, Cuba.

Glaucopis elegantula and *nitidula*, Herrich-Schäffer, *l. c.* p. 114, and *G. eximia*, H.-Sch. *l. c.* p. 115, Cuba.

Correbia subochrea, Herrich-Schäffer, *l. c.* p. 115, Cuba.

Charidea cimicoides, Herrich-Schäffer, *l. c.* p. 116, and *C. bicolor*, H.-Sch. ibid., Cuba.

Charidea bivulnera, Grote & Robinson, *l. c.* p. 365, pl. 13. fig. 2, Mexico.

Syntomis cuprea, Prittwitz, Stett. ent. Zeit. 1867, p. 277, Himalaya.

Echeta albipennis, Herrich-Schäffer, *l. c.* p. 117, Cuba.

Sesiidæ.

Stainton figures *Trochilium formicæforme* (Brit. Butt. & Moths, pl. 3. fig. 6).

Sesia chalcocnemis (Staud.) is a variety of *chrysidiformis* (Lasp.) according to Mabille, Ann. Soc. Ent. Fr. 4e sér. vi. p. 557.

E. G. Meek notices a white-belted variety of *Sesia culiciformis* ♂ taken in copulation with a red-belted ♀. Ent. M. Mag. iv. p. 153.

Sesia miniacea. G. Allard notices this species as found by him in Algeria (Ann. Soc. Ent. Fr. 4e sér. vii. p. 316).

Sesia scoliæformis occurs in Scotland, N. Cooke, Ent. M. Mag. iv. p. 61.

Sesia chrysidiformis (Esp.). Larva described by Buckler, Ent. M. Mag. iv. p. 14.

G. Semper notices the larva of *Sesia hylas* (Linn.). Verh. zool.-bot. Ges. in Wien, xvii. p. 700.

Trochilium hospes, sp. n., Walsh, Proc. Ent. Soc. Phil. vi. p. 270, from willow-galls.

Sesia cubana, sp. n., Herrich-Schäffer, Corr.-Bl. zool.-min. Ver. Regensb. xx. p. 106, Cuba.

Hepialidæ.

Stainton figures *Hepialus velleda* (Brit. Butt. & Moths, pl. 4. fig. 1).

F. Wildner publishes (Verh. naturf. Ver. in Brünn, iv. Sitzungsber. pp. 85–87) a note upon *Pygæra timon* (Hübn.) and its occurrence in the neighbourhood of Brünn.

Bombycidæ.

The Cuban species of this family are noticed by Herrich-Schäffer (Corr.-Blatt zool.-min. Ver. Regensb. xx. pp. 132–134). *Perophora* (Harris) is referred by him to the Saturniides.

Bombycides.

Adelocephala. Grote & Robinson (Trans. Amer. Ent. Soc. i. pp. 7, 8) discuss the characters of this genus, of which they describe 2 new species and figure *A. bicolor* (pl. 1. figs. 3 & 4) = *Dryocampa bicolor* (Harr.).

Citheronia. Grote & Robinson (Ann. Lyc. Nat. Hist. New York, viii. pp. 379–387) discuss the species of this genus, of which they give the synonymy in detail. They figure *C. regalis* (Hübn.), *l. c.* pl. 12. fig. 1, and *C. sepulcralis* (Gr. & Rob.), pl. 12. figs. 2 & 3.

Girard (Ann. Soc. Ent. Fr. 4e sér. vi. pp. 565–567) notices an example of the albino variety of *Bombyx castrensis* described under the name of *taraxacoides* by Bellier de la Chavignerie. His specimen shows a more complete uniformity of tint than those described by the last-mentioned author, but, like them, it is a ♀.

Lasiocampa trifolii. Bond notices a variety of this species. Proc. Ent. Soc. 1867, p. lxx.

E. Ballion describes and figures an hermaphrodite of *Endromis versicolora* (Linn.), in which the right side is male and the left female. The difference of sexual character extends to the body. Horæ Soc. Ent. Ross. iv. p. 33, pl. 1. fig. 2.

Hinterwaldner records a case of parthenogenesis in *Saturnia cynthia*. Zeitschr. des Ferdinand. 3te Folge, xiii. p. 221.

Christoph (Stett. ent. Zeit. 1867, pp. 240–242) describes the development of *Bombyx eversmanni*, which, from the characters and mode of life of the larva, he is led to regard as a distinct species. He thinks that *B. coeles* is also specifically distinct, but that *B. ratamæ* and *terreni* are local varieties of *B. eversmanni*.

G. Semper notices the transformations of the following species:—*Hypsa monycha* (Cram.), *H. plana* (Walk.), *Argina astrea* (Drury), *Phalaena polymena* (Linn.), *Lymantria lunata* (Cram.), and *Taragama ganesa* (Lefebvre). Verh. zool.-bot. Ges. in Wien, xvii. p. 701.

Gastropacha pini. Künstler reports on this species. Verh. zool.-bot. Ges. in Wien, xvii. pp. 955–958.

Goureau (Insectes nuisibles, pp. 111–116) notices and describes *Cnethocampa processionea* and *pityocampa* as injurious on account of the irritation produced in the skin by the hairs of their larvæ. He also describes *Calosoma sycophanta* as one of the chief enemies of these larvæ.

Guérin-Méneville, notes on sericiculture. Rev. et Mag. de Zool. 1867, pp. 219–224, 305–312, 340–352, 383–384, 413–416, and 456–458.

M. Girard communicated to the French Entomological Society a series of notes on sericiculture (Ann. Soc. Ent. Fr. 4e sér. vii. pp. 381–386) relating to the results obtained at Brives by Mdlle. de Lavergne, and at the Jardin d'Acclimatation. The species referred to are *Sericaria mori*, *Attacus arrindia*, *A. cynthia*, *A. yamamaï*, *A. mylitta*, and *A. aurota*. Girard also notices the epidemic observed in larvæ of Lepidoptera in France in 1867.

Guérin-Méneville remarks upon various species of Silkworms (Bull. Soc. Ent. Fr. 1867, pp. xxxi–xxxii). The species referred to are *B. mylitta* and *selene* and a new species of *Lasiocampa* from Senegal (*vide infrà*). Guérin also read a note from Chavannes (*l. c.* pp. xxxii–xxxiv) in support of his notion that the vibratile corpuscles in the diseased Silkworms "are the nucleoli of the blood-corpuscles vitiated by the presence of uric and hippuric acids." This view is disputed by Gervais, Künckel, and Laboulbène.

Vlacovich has published an elaborate memoir on the Silkworm-disease, and especially on the oscillating corpuscles occurring in the affected individuals. Atti Istit. Veneto, xii. pp. 139–170 and 269–298.

Balbiani remarks (Bull. Soc. Ent. Fr. 1867, p. xxviii) upon the Silkworm-disease and the demonstration of its infectious nature. Caterpillars of *Gastropacha neustria* were infected by feeding on leaves which had been moistened with water containing crushed diseased Silkworms, and Clothes-moths were similarly affected when their food was dusted over with the same insects powdered.

Balbiani's experiments on the infectious nature of muscardine are noticed by M'Lachlan, Proc. Ent. Soc. 1867, p. cv.

Balbiani gives an account of his observations on the corpuscles present in diseased Silkworms in Bull. Soc. Ent. Fr. 1867, p. xix.

J. Mitchell, in reference to a statement made by Hutton that the two silk fibres produced from the spinning-tubes of Silkworms are twisted together, states that, on the contrary, every silk-fibre in the cocoon consists of two threads laid side by side and united by a glutinous material. In bleached spun silk the filaments are single, the uniting material having been removed in the process of manufacture. The author also remarks on the form of the silk fibre in different species. Trans. Ent. Soc. 3rd ser. ii. pp. 443–444.

F. Dronke communicates (Rev. et Mag. de Zool. 1867, pp. 123–128) a note on the disease of the common Silkworm, in which he dwells especially on the mineral constituents contained in the mulberry leaves on which these animals are fed, and suggests that the exhaustion of these mineral constituents in the soil, and their consequent diminution in the leaves of the mulberry-trees, may be the cause of the unhealthy condition of the Silkworms. He recommends that experiments should be made with various manures, and indicates the system to be followed according to the morbid symptoms presented by the Silkworms.

Hutton thinks that the Japanese Silkworm producing green cocoons is a hybrid between *B. mori* and *B. sinensis*, and suggests that entomologists should be sent to China to discover, if possible, *B. mori* in its natural state. Proc. Ent. Soc. 1866, p. xlix.

Guérin-Méneville notices some Silkworms' eggs received from the neighbourhood of Quito, belonging to a race which has been hitherto free from disease. He remarks that these eggs, when transported from Peru to Europe, do not hatch until the second spring. Bull. Soc. Ent. Fr. 1867, p. xviii.

Guérin-Méneville notices a Silkworm (*B. mori*) having one side dark and the other white. Bull. Soc. Ent. Fr. 1867, p. li.

Giebel records the production of two males of *Bombyx mori* from a single cocoon. Zeitschr. ges. Naturw. xxx. p. 127.

Bombyx cynthia. A. Wallace records (Trans. Ent. Soc. 3rd ser. v. pp. 485–492) some observations made by him in 1866 on the variations of this species. In that year he bred over 4000 specimens of *B. cynthia*. These emerged between May 30 and August 8. The darkest moths were produced from the cocoons least exposed to the light, and especially from those which still retained their covering of leaves. The earlier specimens were of an olive-green tint, the later ones yellowish, corresponding with the change of colour of the Ailanthus-leaves. The late specimens were small and weak, as also two the larvæ of which were fed on plum and laburnum. The cocoons of a second brood, fed on celery leaves, were dwarfs and deficient in colour. Although several months later in spinning up than the first brood, they emerged earlier. Wallace has some interesting and important remarks on the variation in the time of emergence, induced in many cases by difference of climate and treatment; and he is inclined to think that, from his observations, some light may be thrown on the question of the prior appearance of males or females in Lepidoptera. He says that, in proportion as the individual is finer, the time required for its metamorphosis is longer; thus the females being larger and heavier will be preceded by the males, which are smaller, and have a smaller amount of reproductive material to mature. The variation of *B. cynthia* in size and colour is very great, and dependent on the food-plant, temperature, exposure to light, and the season of the year at which the insects are produced. Wallace discusses the question of the specific distinctness of *B. cynthia*, *ricini*, and *guerinii*. The last-mentioned, he thinks, will prove to be a variety of *B. cynthia*; and from a comparison of the latter with *B. ricini*, he is inclined to consider this also a form of *B. cynthia*. In concluding, Wallace mentions his finding about 20 living pupæ amongst his empty cocoons at the end of the autumn, notices the production of a clicking sound by the eggs during the development of the larvæ, and records the occurrence of free specimens of *B. cynthia* in his neighbourhood.

A. R. Wallace accepts his namesake's theory as to the early development of males, and indicates how, on Darwinian principles, this would explain the predominance of small males. Proc. Ent. Soc. 1867, p. lxxi.

Bombyx cynthia. Notes on the cultivation of this species by Wallace, in Proc. Ent. Soc. 1865, pp. 119–121.—Gredler notices (Corr.-Blatt zool.-min. Ver. Regensb. xx. pp. 50–56) some experiments made in rearing *Bombyx cynthia* in the vicinity of Bozen.—Hutton (Proc. Ent. Soc. 1867, pp. lxxxii–lxxxiv) discusses the question raised by Bree of the identity of *Attacus*

cynthia and *A. ricini*, and maintains that these insects belong to distinct species.—Ernest Cotty publishes some remarks on the naturalization of *Bombyx cynthia* in France. Mém. Soc. Linn. Nord Fr. 1866, pp. 147–158.—René Vion also notices the rearing of this species in the open air at Amiens. Ibid. p. 205.—Notices of the occurrence of *Bombyx cynthia* in Paris, living in freedom, are communicated by Lucas, Girard, Künckel, and Guérin-Méneville. Bull. Ent. Soc. Fr. 1867, pp. xlix–li.—Fallou on the same subject. Ibid. p. lxiv.

Wallace (Trans. Ent. Soc. 3rd ser. v. pp. 355–428) publishes an important memoir on the breeding of *Bombyx yamamaï* in England.—Wullschlegel communicates the results of his experiments in breeding the Ja-ma-maï Silkworm. Mitth. schweiz. ent. Gesellsch. ii. pp. 151–153.—Baumann notices his experiments in breeding *Bombyx yama-maï* at Bamberg. Sitzungsb. zool.-bot. Ges. in Wien, 1867, p. 125.—Baron von Bretton gives an account of the successful introduction of *Bombyx yamamaï* into Moravia. Bull. Soc. Ent. Fr. 1867, pp. xxi–xxii.—Guérin-Méneville (Comptes Rendus, lxv. pp. 946–947) gives a short account of his experiments in the cultivation of *Bombyx yama-maï* and *B. mylitta*.—G. Gascoyne publishes (Entomologist, iii. pp. 333–335) some notes on rearing the larvæ of *Bombyx yama-maï*.

Trouvelot publishes (Amer. Natural. i. pp. 30–38, 85–94, and 145–149) an account of the natural history of *Telea polyphemus* and of his endeavours to rear it as a source of silk. He figures both sexes of the moth (*l. c.* pl. 5 ♀, and 6 ♂), and also the larva, cocoon, and chrysalis.

Westwood notices a Chinese species of *Saturnia* from which "gut" used by anglers is said to be obtained, and explains the process of preparing the gut. Janson says that the gut is procured from the common Silkworm in the south of Europe. Proc. Ent. Soc. 1867, pp. civ–cv.

Psephopaectes, g. n., Grote & Robinson, Trans. Amer. Ent. Soc. i. p. 5. Allied to *Adelocephala*; head depressed; eyes very large, globose; clypeus broad, triangulate; antennæ slender, bipectinate in their basal third (♀); mouth obsolete; thorax long, globose, and elevated; wings narrow and elongate. Sp. *P. simulatilis*, sp. n., Grote & Rob. *l. c.* p. 6, pl. 1. fig. 1, Mexico.

New species:—

Citheronia mexicana, Grote & Robinson, Ann. Lyc. New York, viii. p. 382, pl. 13. fig. 1, Mexico.

Adelocephala grandis, Grote & Robinson, *l. c.* p. 8, pl. 1. fig. 7, Mexico; *A. quadrilineata*, Grote & Rob. *l. c.* p. 11, pl. 1. fig. 2, Mexico.

Lasiocampa parinarii, Guérin, Bull. Soc. Ent. Fr. 1867, p. xxxii, from Senegal.

Anisota walkeri, Grote, Proc. Ent. Soc. Phil. vi. p. 300, note, Brazil (= *Dryocampa rubicunda*, Walk. nec Fab.).

Limacodides.

Grote & Robinson (Ann. Lyc. N. H. New York, viii. p. 373) propose the name of *Packardia* for Packard's genus *Cyrtosia*, the latter name being preoccupied in Diptera.

Limacodes inornata, sp. n., Grote & Robinson, *l. c.* p. 372, Pennsylvania.

Psychides.

Grote (Proc. Ent. Soc. Phil. vi. pp. 331–333) discusses the relations of his genus *Hymenopsyche*, referred by Clemens to *Thyridopteryx* (Steph.).

Claus has discovered the true male of *Psyche helix*, which differs from the female both in the larva-state and in some points in the construction of its case. The larva, pupa and case, as also the perfect ♂ and the details of its wings and antennæ, are described and figured by Claus (Zeitschr. für wiss. Zool. xvii. pp. 470–479, pl. 11); the imago is identical with *Psyche helicinella* (H.-Sch.). In connexion with this discovery Claus also discusses the recorded facts as to parthenogenesis in the *Psychides*.

Fallou records a case of parthenogenesis observed by him in *Psyche nitidella*. Bull. Soc. Ent. Fr. 1867, p. xlvii.

Grenier notices (Bull. Soc. Ent. Fr. 1867, pp. xxxv–xxxvi) his having received from Mexico (Monterey) some cases apparently belonging to a gigantic species of this group. They measure 13–14 centimetres (between 5 and 6 inches) in length, and are composed of little sticks placed transversely. The caterpillars are said to feed upon the rose, arbutus, and poplar, and to attach one end of their case to a branch by a silken band until they have consumed all the leaves within their reach, when they cut the band and go in search of a fresh station. The addition of new sticks to the case is made by the insect without issuing from its shelter, by pushing its head through a hole made just above the last little stick attached.

Goossens remarks (*l. c.* p. xxxvii) that he had a great number of cases and caterpillars from Montevideo, apparently identical with the above.

Guérin-Méneville notices his *Dipyle boucardi* in Bull. Soc. Ent. Fr. 1867, p. xci.

Psyche plumifera. On the habits of this species see Becker, Bull. Soc. Nat. Mosc. xl. 1. p. 111.

New genera :—

Psychocampa, g. n., Grote & Robinson, Ann. Lyc. New York, viii. p. 374. Allied to *Oiketicus* and *Lacosoma*; antennæ short, coarsely bipectinate, reflexed at the apex where the pectinations are one-half shorter; body cylindrical, hairy; anal segment with a long tuft of hair; fore wings long, pointed, falcate, hind wings subquadrate, anal angle prominent but obtuse. Sp. *P. concolor*, sp. n., Grote & Robinson, *l. c.* p. 375, pl. 14. fig. 5, Para.

Pseudohazis, g. n., Grote & Robinson, *l. c.* p. 377. Allied to *Hemileuca*; antennæ long, with broad, dependent, strongly setose pectinations; wings ample, rather long, venules long and straight. Sp. *Saturnia eglanterina* (Boisd.) and *S. hera* (Harr.).

New species :—

Psyche valesiella, Millière, Ann. Soc. Linn. Lyon, xiv. p. 358, pl. 77. figs. 6, 7 (with case), Switzerland.

Fumea græcella, Millière, *l. c.* p. 360, pl. 77. figs. 8, 9 (with case), south of France.—*Fumea ardua*, Mann, *l. c.* p. 845, Franz-Josefs-Höhe and Grossglockner.

Dipyle boucardi, Guérin-Méneville, Rev. et Mag. de Zool. 1867, p. 455, Mexico (description founded only on the case).

Dasychirides.

Stainton figures *Orgyia gonostigma* (Brit. Butt. & Moths, pl. 5. fig. 2).

Orgyia splendida. G. Allard notices the habits of this moth, observed by him in Algeria. (Ann. Soc. Ent. Fr. 4e sér. vii. p. 316).

Orgya (sic) *ramburii*, sp. n., Mabille, Ann. Soc. Ent. Fr. 4e sér. vi. p. 557, pl. 8. figs. 6, & vii. p. 636, Corsica.

Euproctis pygmæa, sp. n., Grote, Proc. Ent. Soc. Phil. vi. p. 320, pl. 5. fig. 11, and *E. fumosa*, sp. n., Grote, *l. c.* p. 321, Cuba.

Liparides.

Stainton figures *Psilura monacha* (Brit. Butt. & Moths, pl. 5. fig. 1).

Liparis rubea (W. V.). Millière describes and figures a rosy variety of this species in all its stages. Ann. Soc. Linn. Lyon, xiv. p. 366, pl. 78. figs. 4–6.

Liparis dispar. M'Lachlan remarks on this species. Proc. Ent. Soc. 1866, p. xlix.

Penthophora morio (Linn.). On the injury done by the larva of this moth to meadows, see Künstler, Verh. zool.-bot. Ges. in Wien, xvii. pp. 953–955.

Coret notices the occurrence of great quantities of larvæ of *Liparis chrysorrhœa* on elms near Suresnes in 1866; the insects disappeared, and produced few Moths. Bull. Soc. Ent. Fr. 1867, p. lxxiii.

Notodontides.

Grote & Robinson (Trans. Amer. Ent. Soc. i.) characterize and figure the following known species:—*Dasylophia inferna* (Pack.), p. 176, pl. 4. fig. 31; *Calodasys* (*Heterocampa*) *leptinoides* (Pack.), p. 177, pl. 4. fig. 33; *Heterocampa obliqua* (Pack.), p. 178, pl. 4. figs. 26–27; and *Het.* (*Lochmæa*) *tessella* (Pack.), p. 182, pl. 4. fig. 29.

Stainton (Brit. Butt. & Moths, pl. 4) figures *Notodonta ziczac* (fig. 2), *Diloba cæruleocephala* (fig. 3), *Clostera anachoreta* (fig. 4), and *Pygæra bucephala* (fig. 5).

Grote & Robinson (Ann. Lyc. N. H. New York, viii. p. 373–374) remark that under the name of *Phalæna angulosa* (Smith) Abbot figures 2 distinct species. The ♀ of one of these has since been figured by Herrich-Schäffer as *Notod. georgica*; this name the authors propose to adopt, and the species will then be *Lophodonta georgica* (H.-Sch.) and *L. angulosa* (Pack.).

Trichiura cratægi. An hermaphrodite of this species is noticed by A. Müller, having the right side ♂ and the left ♀ throughout. Ent. M. Mag. iii. p. 213.

Cerura bicuspis. Gedge finds 268 eggs in the ♀ of this species. Ent. M. Mag. iii. p. 206.

Notodonta unicolora (Ménétr.). A. F. Hüber describes the metamorphoses of this species. Horæ Soc. Ent. Ross. iv. pp. 37–40, pl. 1. figs. 3 & 4.

New species:—

Heterocampa brunnea, Grote & Robinson, Trans. Amer. Ent. Soc. i. p. 180, pl. 4. fig. 28, *H. elongata*, Grote & Rob. *l. c.* p. 184, pl. 4. fig. 30, and *H. pulverea*, Grote & Rob. *l. c.* p. 185, pl. 4. fig. 32, Pennsylvania.

Edema insularis, Grote, Proc. Ent. Soc. Phil. vi. p. 321, Cuba.

Harpyia interrupta, Christoph, Stett. ent. Zeit. 1867, p. 233, Sarepta.

Heterandra disparilis, Herrich-Schäffer, Corr.-Blatt zool.-min. Ver. Regensb. xx. p. 134, Cuba.

Platypterygides.

Speyer remarks that the frenula of the hind wings are present in both sexes of *Cilix ruffa* (Linn.)=*spinula* (W. V.). Stett. ent. Zeit. 1867, p. 73.

Arctiidæ.

The Cuban species and genera of this family are remarked upon by Herrich-Schäffer, Corr.-Blatt zool.-min. Ver. Regensb. xx. pp. 130–132.

Grote & Robinson (Ann. Lyc. New York, viii. p. 368) remark that *Arctia celia* (Saund.)=*B. figurata* (Drury), and that *B. cunegunda* (Pal. B.) =*Ecpantheria scribonia* (Hübn.).

Grote (Proc. Ent. Soc. Phil. vi. pp. 332–334) refers to Walsh's views upon species of *Halisidota* and to his theory of phytophagic varieties and species.

Bellier de la Chavignerie notices the characters of *Chelonia dejeanii* (God.) and *C. konewkai* (H.-Sch.). Bull. Soc. Ent. Fr. 1867, pp. iv & v.

Mazæras (Walk.). *Eucharia sacrifica* (Hübn.) is referred to this genus by Butler, Ann. Mag. N. H. 3rd ser. xx. p. 218. Butler also figures *M. conferta* (Walk.), *l. c.* pl. 4. fig. 1.

Stainton figures *Hypercompa dominula* (Brit. Butt. & Moths, pl. 5. fig. 3) and *Arctia villica* (fig. 5).

Chelonia caja. E. Hopley refers to the capricious variation of this species, and particularly notices a ♂ specimen almost destitute of dark markings. Ent. M. Mag. iii. pp. 211–212.

Packard (Proc. Bost. Soc. N. H. xi. pp. 33–35) remarks on the characters of specimens of *Euprepia caja* and *Arctia quenselii* occurring in Labrador, and also indicates the characters of a larva of some unknown species of *Arctia* found on the larch at Square Island.

Chelonia quenselii. Fallou on the rearing of larva of this species, and on variation in *Chelonia caja.* Bull. Soc. Ent. Fr. 1866, pp. lv, lvi.

Callimorpha hera (Boisd.). Fallou notices an experiment in rearing this insect, in which from 12 pupæ from the same brood he obtained 6 moths with the wings and abdomen yellow, and 3 of the red type. Bull. Soc. Ent. Fr. 1866, pp. lxi, lxii.

New species:—

Arctia kindermanni, Staudinger, Stett. ent. Zeit. 1867, p. 102, Ural; *A. grumeri* (Kinderm. MS.), Staud. *l. c.* p. 104, Altai; *A. maculosa*, var. ? *cæcilia* (Kinderm. MS.), Staud. *l. c.* p. 105, Altai.

Arctia mexicana, Grote & Robinson, Ann. Lyc. New York, viii. p. 367, pl. 13. fig. 3, Mexico.

Ecpantheria leucarctioides, Grote & Robinson, *l. c.* p. 369, pl. 14. figs. 3 & 4, Mexico.

Ecpantheria cyancicornis, Grote, Proc. Ent. Soc. Phil. vi. p. 314, Cuba.

Euhalisidota. Grote (*l. c.*) describes the following new species from Cuba:

—*E. fasciata*, p. 315, pl. 5. figs. 7, 8; *E. scripta*, p. 317, pl. 5. fig. 9; and *E. alternata*, p. 318, pl. 5. fig. 10.

Erithales proxima, Grote, *l. c.* p. 320, Cuba.

Callimorpha venus, Prittwitz, Stett. ent. Zeit. 1867, p. 274, Himalaya.

Mazaeras woodii, sp. n., Butler, Ann. Mag. N. H. 3rd ser. xx. p. 218, pl. 4. figs. 2 & 3, Bahia.

Pericopis cubana, Herrich-Schäffer, *l. c.* p. 131, Cuba.

Lithosiidæ.

Setina. Zeller publishes a revision of the European species of this genus in continuation of his former observations (Stett. ent. Zeit. 1867, pp. 33–49). He discusses the characters of the species and of their varieties, and gives diagnoses of them, with the exception of *S. mesomella*, about which he thinks there is nothing doubtful. The species noticed are:—*S. flava* (Brem.) =*ochracea* (Led.), p. 33; *S. irrorella* (Linn.), p. 34, with 3 varieties; *S. freyeri* (Nick.), p. 36, with vars. *signata* (Borkh.) and *andereggii* (H.-Sch.); *S. aurita* (Esp.), p. 45, with var. *ramosa* (Fab.); *S. alpestris* (Zell.), p. 45; *S. kuhlweinii* (Hübn.), p. 46, with 4 varieties; *S. flavicans* (Boisd.), p. 48; *S. roscida* (Hübn.), and *S. melanomos* (Nick.), p. 49. Guenée's views as to the distinctness of *S. aurita* and *ramosa* are discussed at length, pp. 41–45; and in a note on p. 41, Zeller remarks on the sounds produced by the *Lithosiæ* and other moths, with special reference to the observations of Laboulbène, Guenée, and Fallou upon this subject.

Herrich-Schäffer (Corr.-Blatt zool.-min. Ver. Regensb. xx. pp. 118–120) remarks upon the Cuban species of this family.

Kefferstein also remarks upon the species of the genus *Setina* (Stett. ent. Zeit. 1867, pp. 278–284), and comes to a conclusion opposed to that of Zeller. He discusses the characters of the forms admitted as specific by the latter, and regards them all as subordinate. According to him, *S. irrorea* is the type form of the species, and the others, all of which show the characteristic 3 rows of black points on the fore wings and have essentially the same larvæ, are only varieties. *S. freyeri* (Nick.) is a small dusky form of the type; *S. freyeri* (Frey.) is a different variety.

Speyer remarks (Stett. ent. Zeit. 1867, p. 125) that *Lithosia molybdeola* (Guen.) and *complana* (Linn.) are distinguished from the rest of the genus by having a dense patch of elevated scales on the front margin of the lower surface of the fore wings. He indicates the distinctions of the two species.

Grote (Proc. Ent. Soc. Phil. vi. pp. 312–314, note) discusses the species of *Crocota* inhabiting the United States.

Stainton figures *Lithosia complanula* (Brit. Butt. & Moths, pl. 5. fig. 4).

Lithosia carniola. On the habits of the larva, see Guérin-Méneville and Berce. Bull. Soc. Ent. Fr. 1867, pp. lix & lx.

Torycus, g. n. ?, Herrich-Schäffer, Corr.-Blatt zool.-min. Ver. Regensb. xx. p. 119. Allied to *Crocota*; vein 5 of hind wings wanting; fore wings with 12 veins, 8+9 stalked, 11 upon 12. Sp. *T. tricolor*, sp. n., H.-Sch. *l. c.* p. 119, Cuba.

Mneza? *albulata*, sp. n., Herrich-Schäffer, *l. c.* p. 120, Cuba.

Lithosia laymerisa, sp. n., Grandidier, Rev. et Mag. de Zool. 1867, p. 274, Madagascar.

Crocota pallicornis, sp. n., Grote, Proc. Ent. Soc. Phil. vi. p. 312, Cuba.

Noctuidæ.

Stainton (Brit. Butt. & Moths) figures the following species of this family:—*Thyatira batis* (pl. 6. fig. 1), *Cymatophora flavicornis* (fig. 2), *Bryophila perla* (fig. 3), *Leucania conigera* (fig. 4), *Hydrœcia nictitans* (fig. 5), *Heliophobus popularis* (fig. 6), *Mamestra persicariæ* (pl. 7. fig. 1), *Miana literosa* (fig. 2), *Agrotis agathina* (fig. 3), *Triphœna ianthina* (fig. 4), *Noctua plecta* (fig. 5), *Tæniocampa gothica* (fig. 6), *Hoporina croceago* (pl. 8. fig. 1), *Dicycla oo* (fig. 2), *Hecatera serena* (fig. 3), *Phlogophora empyrea* (fig. 4), *Hadena rectilinea* (fig. 5), and *Heliothis marginata* (fig. 6).

Millière (Ann. Soc. Linn. Lyon, xiv.) describes and figures the following species of this family, generally in all stages:—*Omia* (*Heliodes*) *theophila* (Staud.), p. 301, pl. 71. fig. 7 (imago); *Noctua leucogaster* (Frey.), p. 327, pl. 74. figs. 6–8; *Laphygma exigua* (Hübn.), p. 330, pl. 75. figs. 2, 3 (larva and imago); *Grammodes geometrica* (Rossi), p. 333, pl. 75. figs. 4–6; *Luperina rubella* (Dup.), p. 355, pl. 77. figs. 1–5; *Leucania punctosa* (Tr.), p. 361, pl. 77. fig. 10 (larva); *L. putrescens* (Tr.), p. 362, pl. 77. fig. 11 (larva); *Eurhipia adulatrix* (Hübn.), p. 368, pl. 78. figs. 7–11; *Polia flavocincta* (Rœs.), var. *meridionalis* (Boisd.), p. 378, pl. 80. figs. 1, 2 (larva and imago); *P. rufocincta* (Hübn.), p. 380, pl. 80. figs. 3–5.

Moore publishes the following notes on the synonymy of Indian species of this family (Proc. Zool. Soc. 1867, pp. 51–80): *Prodenia glaucistriga* (Walk.) = *ciligera* (Guen.), as also does probably *P. retina* (Boisd.); *P. insignata* (Walk.) = *infecta* (Walk.); *Calogramma picta* (Guen.) = *festiva* (Don.); *Perigea canorufa* and *illecta* (Walk.) = ♂ ♀ *apameoïdes* (Guen.); *Amyna spoliata* (Walk.) = *selenampha* (Guen.); *Agrotis basiclavis* (Walk.) = *Ochropleura flammatra* (Gmel., Guen.); *Micra hemirhoda* and *Anthophila roscifascia* = *Anthophila hæmorrhoida*; *Ingura recurrens* (Walk.) = *Abrostola subapicalis* (Walk.); *Plusia inchoata* (Walk.) = *agramma* (Guen.); *Deva conducens* (Walk.) = *Plusiodonta chalsytoides* (Guen.); *Tegna hyblæella* (Walk.) = *Phycodes hirundinicornis* (Guen.); *Cirradia variolosa* (Walk.) = *Cosmophila xanthindyma* (Boisd.); *Remigia triangulata* (Walk.) = *Toxocampa costimacula* (Guen.); *Piada* (Walk.) = *Anuga* (Guen.); *Cerbia* (Walk.) = *Pandesma* (Guen.); *Alamis brevipalpis* (Walk.) = *Polydesma boarmoides* (Guen.); *Cocytodes immodesta* (Guen.) = *modesta* (Van der Hoev.); *Calicula exempta* (Walk.) = *Erygia apicalis* (Guen.); *Steiria subfasciata* and *quadristrigata* (Walk.) = *Briada bolinoides* (Walk.), belonging to the genus *Odontodes* (Guen.); *Noctua dioscoreæ* (Fab.), and *Phal. Noct. pomona* (Cram.) = *Ophideres fullonica* (Linn.); *Sericia parvipennis* (Walk.) = *retrahens* (Walk.); *Noctua bubo* (Fab.) = *Patula macrops* (Linn.); *Phal. mygdonia* and *hermonia* (Cram.) = *Argiva hieroglyphica* (Drury); *Nyctipao exterior* (Walk.) = ♀ *obliterans* (Walk.); *Hypopyra mollis* (Guen.) = *Spirama triloba* (Guen.); *Maxula idonea* and *Angerona pœcusaria* (Walk.) = *Hypopyra unistrigata* (Guen.); *Remigia colligens* (Walk.) = *Hulodes palumba* (Guen.); *Sphingomorpha sipyla* (Guen.) = *chlorea* (Cram.); *Sympis subunita* (Guen.), *Cotuza drepanoides* (Walk.), and *Ginea removens* (Walk.) = *Cotuza umminia*; *Remigia perfidiosa* and *Ophisma cunuli-*

fera (Walk.) = *Cotuza deficiens* (Walk.); *Ophisma latabilis* (Guen.) = *Hemeroblemma peropaca* (Hübn.); *Ophiusa obumbrata* and *umbrosa* (Walk.) = *Naxia onelia* (Guen.); *Poaphila hamata* (Walk.) = *Trigonodes gammoides* (Walk.) referred to *Hypætra*; *Phal. virbia* (Cram.) and *Remigia bifasciata* (Walk.) = *Remigia archesia* (Cram.); *Chalciope lycopodia* (Geyer) = *R. frugalis* (Fab.); *Drepanodes scitaria* and *Anisodes pyriniata* (Walk.) = *Thermesia reticulata* (Walk.); *Thermesia transducta* (Walk.) = *Azazia rubricans* (Boisd.); *Mestleta* (Walk.) = *Selenis* (Guen.); *Selenis niviapex* (Walk.) = *irrecta* (Walk.); *Nysis lata* (Walk.) = *Fascellina chromataria* (Walk.); *Cotuza deficiens* (= *Ophisma deficiens*, Walk.) is figured by Moore, *l. c.* pl. 7. fig. 1, and *Cauna pulchripicta* (Walk.), pl. 6. fig. 10.

According to Grote & Robinson (Trans. Amer. Ent. Soc. i. p. 188) *Archicaris resoluta* (Zell.) = *Anarta brephoides* (Walk.), which, with *Brephos infans* (Möschl.), they refer to *Archicaris* (Hübn.).

Tapinostola? bondii (Knaggs). H. Doubleday discusses the question of the identity or non-identity of this species and *Nonagria extrema* (Hübn.), Ent. M. Mag. iii. p. 257.

Hadena fasciuncula (Haw.). Speyer (Stett. ent. Zeit. 1867, p. 126) remarks upon the distinctive characters of this form, which he seems inclined to regard as a species.

Caradrina. Speyer indicates some characters for the distinction of the species belonging to the group of *C. alsines* which may be derived from the antennæ of the ♂. Stett. ent. Zeit. 1867, p. 76.

G. Allard enumerates 14 species of this family taken by him in Algeria. *Catocala conversa* feeds on the evergreen oak. (Ann. Soc. Ent. Fr. 4ᵉ sér. vii. p. 317.)

Xylina zinckenii. S. Canning records the capture of a specimen of this species in Britain. Ent. M. Mag. iii. p. 235. H. Doubleday also publishes a note on this insect (ibid.).

Polia nigrocincta (Ochs.), its occurrence in the Isle of Man recorded by N. Greening, Ent. M. Mag. iv. p. 113; in Cornwall by E. Hopley, *l. c.* p. 132. Figured by Knaggs, Ent. Ann. 1868, Front. fig. 1.

Weir notices a specimen of *Xylina petrificata* resembling *X. semibrunnea* in colour. Proc. Ent. Soc. 1865, p. 115.

Hoporina croceago. A Corsican variety described by Mabille, Ann. Soc. Ent. Fr. 4ᵉ sér. vii. p. 641.

The larvæ of the following species are described by Newman (Entomologist, iii.):—*Epunda viminalis*, p. 322, *Noctua triangulum*, *brunnea*, and *festiva*, p. 326, *N. plecta*, p. 359, and *Xanthia gilvago*, p. 342; and that of *Agrophila sulphuralis*, by Hellins, *l. c.* p. 360.

The larvæ of the following species are described by Buckler:—*Agrotis lunigera* (Steph.), Ent. M. Mag. iii. p. 188; *Cucullia umbratica* (Linn.), *l. c.* p. 208; *C. scrophulariæ* (W. V.) and *verbasci* (Linn.), Ent. M. Mag. iv. pp. 116–117; *Acronycta auricoma* (W. V.), Ent. M. Mag. iii. p. 261; *Aplecta advena* (W. V.), *l. c.* p. 14; *Hadena genistæ* (Bork.), *adusta* (Esp.), and *thalassina* (Hufn.), *l. c.* pp. 61–64; *Agrophila sulphuralis* (Linn.), *l. c.* pp. 115, 116; *Cirradia xerampelina* (Hübn.), *l. c.* p. 136; *Miana furuncula* (Haw.), *l. c.* p. 137; and *Xanthia gilvago* (W. V.), *l. c.* p. 156. Also the life-history of *Catocala sponsa* (Linn.), Ent. M. Mag. iii. pp. 276, 277. Hellins also describes the larvæ of *Anchocelis lunosa* (Haw.), Ent. M. Mag. iii. p. 260.

Christoph (Stett. ent. Zeit. 1867, pp. 242–244) describes the larvæ and mode of life of *Mycteroplus puniceago* and *Euterpia laudeti*.

A. Gartner (Verh. nat. Ver. Brünn, v. pp. 36–40) notices the transformations of *Perigrapha i cinctum* (V.).

Prittwitz (Stett. ent. Zeit. 1867, pp. 257–266) publishes notes on several species of this family, referring especially to the habits of the larvæ. As he gives no generic names, *Noctua* may be supplied. The species are:—*N. pallens, croceago, herbida, serena, morpheus, convergens, sigma, occulta, advena, brunnea, nebulosa, cœnobita,* and *glauca,* and *Eriopus pteridis*.

G. Semper (Verh. zool.-bot. Ges. in Wien, xvii. p. 702) notices the transformations of the following species:—*Calogramma picta* (Guér.), larva and pupa figured (pl. 23. fig. 4); *Ophiodes separans* (Walk.), larva and pupa figured (*l. c.* fig. 6); *Achæa melicerta* (Drury), larva and pupa figured (*l. c.* fig. 5), and *Ophiusa arctotœnia* (Guen.).

Mabille notices the habits of the larvæ of *Plusia accentifera* (Lef.) and *Anthophila wimmerii* (Tr.)=*oblitterata* (Ramb.). Ann. Soc. Ent. Fr. 4e ser. vi. p. 559.

Agrotis saucia is double-brooded, according to Jordan and Hellins, Ent. M. Mag. iv. p. 134–135.

Noctua segetum. Sélys-Longchamps publishes a note on the injury inflicted by this insect upon the beetroot in some parts of Belgium. It is accompanied by some remarks by Breyer on the habits of the insect. Ann. Soc. Ent. Belg. x. Comptes Rendus, pp. viii–x.

Agrotis segetum. On the injury done by this insect to corn-crops, see Künstler, Verh. zool.-bot. Ges. in Wien, xvii. pp. 932–934.

Plusia gamma. On injury done to flax-crops by this insect, see Künstler, Verh. zool.-bot. Ges. in Wien, xvii. pp. 946–948.

A. Müller (Entomologist, iii. pp. 213–215) publishes a summary of the evidence connecting the so-called "army worm" with *Heliothis armiger*. He is inclined to think that the larvæ of several species have been confounded under the name of "army worm."

F. Smith notices the "Bugong" moth (probably *Agrotis spina*, Guen.), used as food by the native Australians. Proc. Ent. Soc. 1865, pp. 129–130.

New genera:—

Vespola, g. n., Walker, Journ. Linn. Soc. ix. p. 185. Allied to *Stictoptera* and *Lophoptera*; palpi very long and slender, joint 2 somewhat arcuate, 3 straight, shorter than 2. Sp. *V. cæruleifera*, sp. n., Walk. *l. c.* p. 186, Bogotá.

Tetrisia, g. n., Walker, *l. c.* p. 186. Allied to *Phyllodes*; joint 3 of palpi subclavate, a little longer than 2. Sp. *T. florigera*, sp. n., Walk. *l. c.* p. 187, Bogotá.

Allia, g. n., Walker, *l. c.* p. 188. (*Ommatophorides.*) Palpi erect, joint 3 linear, a little longer than 2; antennæ setulose; apical abdominal tuft very small. Sp. *A. ocellata*, sp. n., Walk. *l. c.* p. 189, Bogotá.

Grymella, g. n., Walker, *l. c.* p. 189. (*Ommatophorides?*) Palpi stout, obliquely ascendant, joint 3 linear, much shorter than 2; antennæ pubescent; apical tuft very small; femora fringed. Sp. *E. hieroglyphica*, sp. n., Walk. *l. c.* p. 190, Bogotá.

Varia, g. n., Walker, *l. c.* p. 190. (*Ophiusides.*) Stout; palpi short, erect,

joint 3 linear, half as long again as 2; antennæ setose; abdomen exceeding posterior wings, its apical tuft small; calcaria very long. Sp. *V. rubiginea*, sp. n., Walk. *l. c.* p. 190, Bogotá.

Batia, g. n., Walker, *l. c.* p. 191. Allied to *Poaphila*; palpi curved, squamose, ascendant, joint 3 lanceolate, much shorter than 2; anterior wings acute, with a subcostal tuft. Sp. *B. squamicosta*, sp. n., Walk. *l. c.* p. 191, Bogotá.

Mandela, g. n., Walker, *l. c.* p. 192. Allied to *Ephyrodes*; wings festooned, anterior scarcely falcate, outer border of posterior not angular. Sp. *M. crocea*, sp. n., Walk. *l. c.* p. 192, Bogotá.

Checupa, g. n., Moore, Proc. Zool. Soc. 1867, p. 60. Allied to *Hadena*; abdomen long, flat, tufted, joints 4–6 produced laterally, 5 prolonged into a horn-like process. Sp. *C. fortissima*, sp. n., Moore, *l. c.* p. 60, pl. 6. fig. 5, Darjeeling.

Tympanistes, g. n., Moore, *l. c.* p. 48. Allied to *Leucania*; abdomen long, cylindrical, with a cavity at the base beneath and a fan-like appendage above it on each side; hind tibiæ with 4 spurs; palpi erect, slender, joint 3 long, cylindrical; fore wings slightly acuminate at apex. Sp. *T. pallida*, sp. n., Moore, *l. c.* p. 49, pl. 6. fig. 1, and *T. testacea*, sp. n., Moore, ibid., pl. 6. fig. 2, Darjeeling. The former species said by Atkinson to make "a clicking noise as it flies."

New species :—

Gonophora indica, Moore, Proc. Zool. Soc. 1867, p. 44, Bengal.

Thyatira albicosta, Moore, *l. c.* p. 45, Bengal.

Osica undulata, Moore, *l. c.* p. 45, Bengal.

Bryophila albistigma, Moore, *l. c.* p. 45, Bengal.

Diphtera (sic) *pallida*, Moore, *l. c.* p. 46, pl. 6. fig. 6, and *D. discibrunnea*, Moore, ibid., pl. 6. fig. 14, Bengal.

Acronycta flavala, Moore, *l. c.* p. 46, and *A. indica*, Moore, *l. c.* p. 47, Bengal.

Amphipyra molybdea, Christoph, Stett. ent. Zeit. 1867, p. 235, Sarepta.

Mythimna cervina, Moore, *l. c.* p. 47, pl. 6. fig. 18, Bengal.

Leucania venalba, Moore, *l. c.* p. 48, Bengal; *L. pulcherrima*, Moore, ibid., pl. 6. fig. 7, Darjeeling.

Nonagria cyrnæa, Mabille, Ann. Soc. Ent. Fr. 4e sér. vi. p. 559, pl. 8. fig. 7, Corsica. Altered to *Sesamia cyrnæa*, *op. cit.* vii. p. 640, where the habits of the larva are noticed. The transformations are figured, *l. c.* pl. 14. fig. 1.

Auchmis sikkimensis, Moore, *l. c.* p. 49, pl. 6. fig. 15, Darjeeling.

Gortyna cuprea, Moore, *l. c.* p. 50, pl. 6. fig. 8, Darjeeling.

Hydræcia naxiaoïdes, Moore, *l. c.* p. 50, Bengal.

Xylophasia flavistigma, Moore, *l. c.* p. 50, and *X. leucostigma*, Moore, *l. c.* p. 51, Bengal.

Dipterygia indica, Moore, *l. c.* p. 51, Darjeeling.

Mamestra. Moore (*l. c.*) describes the following new Bengalese species of this genus:—*M. nigrocuprea*, *suffusa*, and *albomaculata*, p. 52, and *M. albirena* and *sikkima*, p. 53.

Epilecta pulcherrima, Moore, *l. c.* p. 54, pl. 6. fig. 3, Darjeeling.

Caradrina sericea, Speyer, Stett. ent. Zeit. 1867, p. 73, Holland and Cassel.

Agrotis littoralis, Packard, Proc. Bost. Soc. N. H. xi. p. 36 (Caribou Island);

A. umbratus, Pack. *l. c.* p. 37, and *A. okakensis*, Pack. *l. c.* p. 38 (Okak), Labrador.

Agrotis nigrina (Kinderm. MS.), Staudinger, Stett. ent. Zeit. 1867, p. 106, and *A. excellens* (Kind. MS.), Staud. *l. c.* p. 107, Altai.

Orthosia pistacinoides, A. d'Aubuisson, Arch. Cosmol. 1867, p. 260, pl. 12. fig. 3, Toulouse.

Leucania rufostrigata, Packard, *l. c.* p. 36, Labrador (Caribou Island).

Graphiphora. Moore describes as new species from Darjeeling:—*G. cerastioïdes*, *fasciata*, and *basistriga*, *l. c.* p. 54, and *G. rubicilla*, *l. c.* p. 55.

Ochropleura renalis, Moore, *l. c.* p. 55, and *O. spilota*, Moore, ibid., Bengal; *O. triangularis*, Moore, ibid., and *O. costalis*, Moore, *l. c.* p. 56, Darjeeling.

Agriopis lepida, Moore, *l. c.* p. 56, and *A. discalis*, Moore, *l. c.* p. 57, pl. 7. fig. 2, Bengal.

Phlogophora indica, Moore, *l. c.* p. 57, Bengal.

Euplexia albovittata, Moore, *l. c.* p. 57, pl. 6. fig. 16, Bengal; *E. discisignata*, Moore, ibid., pl. 6. fig. 9, and *E. striatovirens*, Moore, *l. c.* p. 58, Darjeeling.

Hadena. Moore (*l. c.*) describes the following new Bengalese species of this genus:—*H. albinota* and *atrovirens*, p. 58; *H. auroviridis*, p. 59, pl. 6. fig. 11; *H. tenebrosa*, p. 59; *H. albidisca*, ibid., pl. 6. fig. 17; and *H. lanceola*, p. 59.

Cucullia tenuis, Moore, *l. c.* p. 60, Darjeeling.

Anarta nigro-lunata, Packard, *l. c.* p. 40 (Okak), and *A. bicycla*, Pack. *l. c.* p. 41 (Atlantic coast), Labrador.

Heliothis phloxiphaga, Grote & Robinson, Trans. Amer. Ent. Soc. i. p. 187, Illinois, Colorado.

Anuga lunulata, Moore, *l. c.* p. 62, Bengal.

Plusia semivitta, Moore, *l. c.* p. 63, pl. 6. fig. 13, Darjeeling.

Hemiceras subochraceum, Walker, Journ. Linn. Soc. ix. p. 184, Bogotá.

Cosmophila aurantiaca, Prittwitz, Stett. ent. Zeit. 1867, p. 277, Himalaya.

Homoptera fimbripes, Walker, *l. c.* p. 185, and *H. paupera*, Walk. ibid., Bogotá.

Nænia cuprea and *N. chalybeata*, Moore, *l. c.* p. 64, Bengal.

Briada varians, Moore, *l. c.* p. 66, pl. 6. fig. 12, Bengal.

Erchcia tenebrosa, Moore, *l. c.* p. 66, Bengal.

Stictoptera grisea, Moore, *l. c.* p. 67, Darjeeling.

Catocala nepcha, Moore, *l. c.* p. 68, Darjeeling.

Phyllodes fasciata, Moore, *l. c.* p. 69, Bengal.

Lygniodes ciliata, Moore, *l. c.* p. 69, Bengal.

Brujas bigutta, Walker, *l. c.* p. 187, Bogotá.

Letis securivitta, Walker, *l. c.* p. 187, Bogotá.

Syrnia albifimbria, Walker, *l. c.* p. 188, Bogotá.

Sypna curvilinea, Moore, *l. c.* p. 69, pl. 6. fig. 4, *S. rectilinea* and *S. cyanivitta*, Moore, *l. c.* p. 70, Bengal.

Tavia biocularis, Moore, *l. c.* p. 71, and *T. catocaloïdes*, Moore, ibid., pl. 7. fig. 3, Bengal.

Ophiodes cuprea, Moore, *l. c.* p. 74, Bengal.

Athyrma tessellata, Moore, *l. c.* p. 76, Bengal.

Drasteria agricola, Grote & Robinson, *l. c.* p. 189, pl. 4. fig. 34, Massachusetts to Pennsylvania; *D. mundula*, Grote & Rob. p. 191, pl. 4. fig. 35, Pennsylvania.

Thermesia bipustulata, Walker, *l. c.* p. 192, Bogotá.
Hypernaria discistriga, Moore, *l. c.* p. 78, Bengal.
Fascellina viridis, Moore, *l. c.* p. 79, pl. 7. fig. 4, Bengal.
Thyridospila sphæriphora, Moore, *l. c.* p. 79, Bengal.
Phurys obliqua and *P. strigata*, Moore, *l. c.* p. 80, Bengal.
Phurys teligera, Walker, *l. c.* p. 191, Bogotá.
Omia oberthüri, G. Allard, Ann. Soc. Ent. Fr. 4e sér. vii. p. 320, pl. 6. fig. 3, Algeria.

Geometridæ.

A. Gartner publishes (Verh. naturf. Ver. in Brünn, iv. pp. 54–93) a list of the Geometridæ of the district of Brünn, in Moravia, including 226 species, or more than one-third of the species known to inhabit Europe, and more than half of those recorded as indigenous to Germany and Switzerland. The habits and food-plants of most of the species are indicated. Gärtner indicates the characters of the larvæ of the following species:—*Boarmia sociaria* (Hübn.), *Geometra smaragdaria* (Fab.) (life-history), *Lythria purpuraria* (Linn.), *Eupithecia venosata* (Fab.), and *Larentia hydrata* (Treits.). He also notices the pupæ of several species.

Herrich-Schäffer (Corr.-Blatt zool.-min. Ver. Regensb. xx. pp. 135–136) notices some Cuban forms belonging to this group, viz. *Cydimon poeyi* (Gundl.) and the species of *Sematura*.

The following species of this family are figured by Millière, generally in all stages (Ann. Soc. Linn. Lyon, xiv.):—*Acidalia immutata* (Linn.), p. 306, pl. 72. figs. 1–3; *A. caricaria* (H.-Sch.), p. 308, pl. 72. figs. 4–7; *A. imitaria* (Hübn.), p. 310, pl. 72. figs. 8–11; *A. depunctata* (Scop.), p. 314, pl. 72. figs. 12–15; *A. ochrata* (Scop.), p. 337, pl. 76. figs. 1–3; *A. obsoletaria* (Ramb.), p. 339, pl. 76. figs. 4–6; *A. politaria* (Hübn.), p. 342, pl. 76. figs. 7–9; *A. moniliata* (W. V.), p. 344, pl. 76. figs. 10–12; *A. incanaria* (Hübn.), p. 346, pl. 76. figs. 13, 14; *Psamatodes catalaunaria* (Guen.), p. 370, pl. 79. figs. 1–4; *Hibernia ankeraria* (Staud.), p. 324, pl. 74. fig. 1 (imago); *Aspilates citraria* (Hübn.), p. 325, pl. 74. figs. 2–5; *Amphidasys betularia* (Linn.), var. ♀, p. 336, pl. 75. fig. 7 (imago).

Stainton (Brit. Butt. & Moths) figures the following species of this family:—*Rumia crataegata* (pl. 9. fig. 1), *Selenia illustraria* (fig. 2), *Ennomos tiliaria* (fig. 3), *Nyssia zonaria* (fig. 4), *Hemerophila abruptaria* (fig. 5), *Pseudoterpna cytisaria* (pl. 10. fig. 1), *Ephyra omicronaria* (fig. 2), *Asthena luteata* (fig. 3), *Acidalia ornata* (fig. 4), *Bradyepetes amataria* (fig. 5), *Macaria liturata* (fig. 6), *Lozogramma petraria* (fig. 7), *Fidonia limbaria* (pl. 11. fig. 1), *Sterrha sacraria* (fig. 2), *Ligdia adustata* (fig. 3), *Hibernia leucophearia* (fig. 4), *Eupithecia venosata* (fig. 5), and *Melanippe procellata* (fig. 6).

Speyer (Stett. ent. Zeit. 1867, pp. 71–72) discusses the characters and habits of *Nemoria viridata* (Linn.) and *porrinata* (Zell.), and describes the larva of the former. Speyer also remarks (*l. c.* p. 73) that *Zonosoma suppunctaria* (Zell.) seems to be a small reddish variety of *Z. trilinearia*.

Gnophos serotinaria (Hübn.). Speyer remarks on the characters and position of this species. Stett. ent. Zeit. 1867, pp. 416–418.

Acidalia interjectaria and *osseata*. Knaggs discusses the characters of these species. Ent. M. Mag. iv. p. 113, and Ent. Ann. 1868, pp. 103 & 107. See also Doubleday, *l. c.* p. 161, and Entomol. iii. p. 261.

Acidalia mancuniata and *reterata*. Newman regards these supposed species as ♀ and ♂ of *pinguedinata* (Zell.), which he does not consider distinct from *subsericeata* (Harr.). Entomologist, iii. p. 227. See also Knaggs, Ent. Ann. 1868, p. 102.

Larentia lapidaria. Bellier de la Chavignerie remarks upon the synonymy and geographical distribution of the insects passing under this name. Bull. Soc. Ent. Fr. 1867, pp. xxvii–xxviii.

Speyer (Stett. ent. Zeit. 1867, pp. 126–128) remarks upon the characters of *Larentia filigrammaria* (H.-Sch.) and *Eupithecia pulchellata* (Steph.).

Macaria alternata (W. V.)=var. *notata* (Linn.), according to Pfützner, Berl. ent. Zeitschr. 1867, p. 208.

Packard (Proc. Bost. Soc. N. H. xi.) refers to the variations observed in the following species collected in Labrador:—*Scotosia dubitata*, *l. c.* p. 44; *Larentia polata* (Boisd.), *l. c.* p. 45, of which *L. gelata* (Guen.) may be a variety; and *Melanippe gothica* (Guen.), *l. c.* p. 46.

Nyssia hispidaria. A dark variety noticed by H. Vaughan, Ent. M. Mag. iv. p. 16.

Tephrosia laricaria. The progeny of a lead-coloured variety of the ♀ noticed by Llewellyn, Ent. M. Mag. iv. p. 16.

Gnophos ophthalmicata (Led.). Speyer (Stett. ent. Zeit. 1867, pp. 349–357) gives a very detailed description of this species, and of its varieties, which he has received under different names from various districts. Its geographical distribution is very wide, extending from the Altai to Provence. *G. ophthalmicata* may be identical with *G. pullularia* (H.-Sch.), which, however, has been referred by its original describer to *pullata* as a var. *G. pullata* (W. V.), *ambiguata* (Dup.), and *meyeraria* (Lah.) are noticed by Speyer.

Sterrha sacraria. M'Lachlan has recorded some interesting observations on the variation of this species (Trans. Ent. Soc. 3rd ser. ii. pp. 453–458). Six eggs obtained from a typical ♀ produced larvæ, all the moths proceeding from which varied considerably from the characters of their parent. These specimens and the larva are figured by M'Lachlan, *l. c.* pl. 23. M'Lachlan remarks upon the wide distribution of *Sterrha sacraria* (which extends over the whole of the Old World), and indicates the following supposed nearly allied species are probably only varieties:—*S. labdaria* (Cram.), Surinam?; *S. anthophilaria* (Hübn.), Russia; *S. rosearia* (Tr.), South Russia and Ionian Islands; *S. plectraria* (Guen.), Abyssinia; *S. participata* and *S. peculiata* (Walk.), South Africa.

Mabille, in his revision of the *Eupithecieæ* of Corsica (Ann. Soc. Ent. Fr. 4e sér. vii. pp. 642–658) enumerates 17 species of that genus, 12 of which he describes, generally with an account of the larvæ, food-plant, &c. *E. pumilata* (Hübn.) is described as the type of a new genus. The other species described are:—*E. venosata* (Fab.), *silenicolata* (Mab. *vide infrà*), *insigniata* (Hübn.)=*consignata* (Borkh.), *centaureata* (W. V.), *merinata* (Guen.), *rectangulata* (Linn.)=? *suberata* (Ramb.), *immotata* (Hübn.), *coccciferata* (Mill.), var. *semitinctaria*, pl. 14. fig. 2, *scopariata* (Ramb.), *oxycedrata* (Ramb.), and a new species.

Snellen has published (Tijdschr. v. Entom. 2de ser. Deel i. pp. 97–168) a memoir on the species of *Eupithecia* inhabiting Holland, of which he enumerates 39. He describes the characters of the genus (which are illustrated on pl. 3), and gives a tabular synopsis, followed by the descriptions, natural

history, and synonymy of the species, which are well figured upon 3 plates. The species figured are:—*E. linariata* (W. V.), pl. 4. fig. 1; *subnotata* (Hübn.), pl. 6. fig. 11; *centaureata* (W. V.), pl. 4. fig. 2; *irriguata* (Hübn.), pl. 4. fig. 8; *abbreviata* (Steph.), pl. 4. figs. 9 & 10; *dodoneata* (Guen.), pl. 4. fig. 11; *sobrinata* (Hübn.), pl. 5. fig. 1; *pumilata* (Hübn.), pl. 4. fig. 7; *piperata* (Steph.), pl. 5. fig. 2; *immotata* (Hübn.), pl. 5. fig. 6; *nanata* (Hübn.), pl. 5. fig. 7; *indigata* (Hübn.), pl. 5. fig. 8; *vulgata* (Haw.), pl. 5. fig. 9; *absynthiata* (Hübn.), pl. 5. fig. 10; *minutata* (Hübn.), pl. 5. fig. 11; *assimilata* (Guen.), pl. 6. fig. 1; *trisignaria* (H.-Sch.), pl. 6. fig. 2; *tripunctaria* (H.-Sch.), pl. 6. fig. 3; *castigata* (Hübn.), pl. 6. fig. 4; *valerianaria* (H.-Sch.), pl. 6. fig. 5; *pygmæata* (Hübn.), pl. 6. fig. 6; *plumbeolata* (Haw.), pl. 6. fig. 7; *tenuiata* (Hübn.), pl. 6. fig. 8; *pusillata* (W. V.), pl. 5. fig. 5; *strobilata* (Borkh.), pl. 5. fig. 3; *togata* (Hübn.), pl. 5. fig. 4; *rectangulata* (Clerck), pl. 6. fig. 9; and *sparsata* (Tr.), pl. 6. fig. 10.

Eumenia maniata, its occurrence near York noticed by Prest, Ent. M. Mag. iii. p. 186.

Ennomos tiliaria abounds in Ireland, according to Miss Lawless, Ent. M. Mag. iii. p. 187.

Fidonia fasciolaria. The natural history of this species is described by Zeller, Stett. ent. Zeit. 1867, pp. 178–183.

Newman (Entomologist, iii.) describes the larvæ of the following species:—*Phibalapteryx vitalbata*, p. 222, *Emmelesia decolorata*, p. 325, *Selenia tiliaria*, p. 339, *Boarmia rhomboidaria*, p. 340, *Fidonia atomaria*, p. 341, *Ephyra porata*, p. 355, *Pachycnemia hippocastanaria*, p. 355, *Melanthia ocellata*, p. 356, and *Pelurga comitata*, p. 357.

Hellins describes the larva of *Lithostege griseata*, Entomologist, iii. p. 358.

The larvæ of the following species are described by Hellins:—*Acidalia rusticata* (W. V.), Ent. M. Mag. iii. p. 259; *Thera simulata* (Hübn.), *firmata* (Hübn.), and *obeliscata*, *l. c.* pp. 277–278; *Lithostege niveata* (W. V.), *l. c.* iv. p. 115; and *Hyria auroraria* (Hübn.), *l. c.* p. 158. Hellins also describes the life-history of *Acidalia emutaria* (Hübn.), *l. c.* pp. 88, 89; and Buckler the larva of *Tanagra chærophyllata* (Linn.), *l. c.* p. 85.

The same author (Ent. M. Mag. iii. p. 185) notices the distinctive characters of the larvæ of *Nyssia hispidaria* and *Phigalia pilosaria*.

Phorodesma smaragdaria. Larva noticed by Becker, Bull. Soc. Nat. Mosc. xl. 1. p. 114.

Ellopia fasciaria (Linn.). Fallou on rearing this species from the egg, Bull. Soc. Ent. Fr. 1866, p. lxii.

Mabille notices the food-plants of *Ellopia pinicolaria* and *Boarmia bastelicaria* (Bellier). Ann. Soc. Ent. Fr. 4e sér. vi. p. 561.

Lobophora appensata (Eversm.). Herrich-Schaffer (Corr.-Blatt zool.-min. Ver. Regensb. xx. p. 90) states that the insect bred from larvæ feeding on *Actæa spicata* by Hofmann (see 'Record,' 1865, p. 622, and 1866, p. 491) is not *L. viretata* (Hübn.), but this species, which is new to Germany.

Epunda nigra. W. Buckler describes 4 varieties of the larva of this species. Ent. M. Mag. iv. pp. 87–88.

Cidaria silaceata. Prest states that this species produces only a single brood annually in the north of England. Ent. M. Mag. iii. p. 235.

Pericyma albidentaria (Fr.). The larva and mode of life of this species are described by Christoph, Stett. ent. Zeit. 1867, pp. 244–245.

C. G. Barrett records the assembling of several males of *Phorodesma bajularia* over the spot where a ♀ was lying. Ent. M. Mag. iv. p. 160.

Eupithecia minutata. D'Orville (Ent. M. Mag. iii. p. 191) records a case of cannibalism in the larva of this species.

Künstler reports (Verh. zool.-bot. Ges. in Wien, xvii. pp. 950-953) on injury done to orchard trees in 1866 and 1867 by *Cheimatobia brumata*, *Amphidasys pomonaria*, and *Hibernia defoliaria*.

New genera:—

Issa, g. n., Walker, *l. c.* p. 198. Allied to *Pachydia*; palpi slender, applied to front, joint 3 very small; antennæ serrate, setose; abdomen with 2 small ventral subapical tufts. Sp. *I. munda*, sp. n., Walk. *l. c.* p. 198, Bogota.

Tora, g. n., Walker, *l. c.* p. 199. Allied to *Emplocia*; wings ample, anterior acute, outer margin very oblique, posterior with outer margin subtruncate, inner margin oblique. Sp. *T. unilinea*, sp. n., Walk. *l. c.* p. 199, Bogota.

Norsia, g. n., Walker *l. c.* p. 196. Allied to *Auxima*; body slender; palpi stout, joint 2 fringed, 3 lanceolate, porrect, half length of 2; antennæ crenulate; abdomen long, apical tuft small; tibiæ fimbriate; anterior wings very long. Sp. *N. vincta*, sp. n., Walk. *l. c.* p. 197, Bogota.

Gymnoscelis, g. n., Mabille, Ann. Soc. Ent. Fr. 4e sér. vii. p. 656. Allied to *Eupithecia*; posterior tibiæ with only 1 pair of spurs; first branch of subcostal vein soldered to the costal, and describing a strong curve. Sp. *E. pumilata* (Hübn.).

Dalima, g. n., Moore, Proc. Zool. Soc. 1867, p. 614. Allied to *Urapteryx*; antennæ (♂) bipectinate; palpi small, joint 2 pyriform, 3 minute; fore wings falcate, costa straight, very convex at apex, which is acute. Sp. *D. apicata*, sp. n., Moore, *l. c.* p. 615, pl. 32. fig. 4, and *D. schistaceata*, sp. n., Moore, ibid., Bengal.

Agnidra, g. n., Moore, *l. c.* p. 618. *Fascellina* (Walk.), ex parte. Palpi small, erect, joint 2 long, 3 small, conical; antennæ (♂) bipectinate for ¾ their length; intermediate tibiæ with 1, and hind tibiæ with 2 pairs of spurs; fore wings falcate. Sp. *F. specularia* (Walk.), *l. c.* pl. 32. fig. 2, and *F. muscularia* (Walk.); *A. discispilaria*, sp. n., Moore, *l. c.* p. 619, Bengal.

Panisala, g. n., Moore, *l. c.* p. 620. Allied to *Angerona*; palpi small, joint 3 minute; antennæ (♂) broadly pectinated; hind tibiæ thickened in middle, with 4 long spurs; fore wings truncated at apex, costa nearly straight; hind wings subquadrate, outer margin angulate in the middle. Sp. *P. truncataria*, sp. n., Moore, *l. c.* p. 620, Bengal.

Garæus, g. n., Moore, *l. c.* p. 623. Allied to *Ennomos*; antennæ (♂) bipectinate; palpi suberect, joint 3 cylindrical, decumbent; thorax broad; fore wings with costa hollowed in the middle, produced and pointed at apex, outer margin scalloped; hind wings deeply scalloped. Sp. *G. specularis*, sp. n., Moore, *l. c.* p. 623, pl. 32. fig. 3, Darjeeling.

Corotia, g. n., Moore, *l. c.* p. 624. Allied to *Œnochroma*; palpi porrect, densely pilose, joint 2 projecting beyond head, 3 short, cylindrical; antennæ pectinated in ♂; fore wings slightly falcate, costa nearly straight, outer margin sinuous near apex; hind wings rounded. Sp. *C. cervinaria*, sp. n., Moore, *l. c.* p. 625, pl. 32. fig. 10, Darjeeling.

Xandrames, g. n., Moore, *l. c.* p. 634. Allied to *Bargosa*; palpi small, densely pilose, joint 3 minute, conical; antennæ pectinated; hind tibiæ

thickened in middle; abdomen long; wings large; fore wings elongate, trigonal, apex somewhat acute, outer margin nearly straight; hind wings rounded. Sp. *X. dholaria*, sp. n., Moore, *l. c.* p. 634, and *X. albofasciata* sp. n., Moore, p. 635, pl. 32. fig. 5, Darjeeling.

Kranamda, g. n., Moore, *l. c.* p. 648. Allied to *Macaria*; palpi porrect, slender, joint 3 small, cylindrical; antennæ minutely serrated in ♂; legs short, hind tibiæ thickened; fore wings falcate, outer margin scalloped, produced in the middle and at the hinder angle; hind wings with apex of fore margin produced. Sp. *K. semihyalina*, sp. n., Moore, *l. c.* p. 648, Bengal.

Vindusara, g. n., Moore, *l. c.* p. 653. Allied to *Abraxas*; antennæ broadly pectinate in ♂; hind tibiæ pilose at the side; fore wings trigonal, posterior angle rounded; hind wings angulated, middle of outer margin produced. Sp. *A. compositata* (Guen.), *l. c.* pl. 32. fig. 6, and *A. metachromata* (Walk.).

Arichanna, g. n., Moore, *l. c.* p. 658. Allied to *Scotosia*; antennæ bipectinated in ♂; intermediate tibiæ with 1, and hind tibiæ with 2 pairs of spurs; fore wings trigonate, apex angulate, outer margin slightly convex; hind wings slightly scalloped. Sp. *S. plagifera* and *ramosa* (Walk.). N. sp. *A. tramesata*, Moore, *l. c.* p. 658, pl. 32. fig. 2, *A. maculata*, Moore, *l. c.* p. 658, and *A. marmorata*, Moore, *l. c.* p. 659, Bengal.

Gandaritis, g. n., Moore, *l. c.* p. 660. Allied to *Cidaria*; palpi ascending; abdomen long; wings very large; fore wings arched, slightly falcate; hind wings produced. Sp. *G. flavata*, sp. n., Moore, *l. c.* p. 660, Bengal.

New species:—

Urapteryx margaritata, Moore, Proc. Zool. Soc. 1867, p. 612, *U. triangularia*, Moore, ibid., and *U. quadripunctata*, Moore, *l. c.* p. 613, Bengal; and *U. falcataria*, Moore, ibid., Darjeeling.

Chorodna pallidularia, Moore, *l. c.* p. 613, and *C. vulpinaria*, Moore, *l. c.* p. 614, Darjeeling.

Clysia discolor, Walker, Journ. Linn. Soc. ix. p. 195, Bogota.

Charodes bogotaria, Walker, *l. c.* p. 195, Bogota.

Charodes testaceata, Moore, *l. c.* p. 615, Bengal.

Lagyra megaspila, Moore, *l. c.* p. 616, Bengal.

Cimicodes castaneata, Moore, *l. c.* p. 616, pl. 32. fig. 1, Darjeeling; *C. costalis* and *C. cruentaria*, Moore, ibid., Bengal.

Auzea apicata and *A. torridaria*, Moore, *l. c.* p. 617, Bengal.

Drepanodes argentilinea, Moore, *l. c.* p. 617, *D. quinaria* and *D. fenestraria*, Moore, *l. c.* p. 618, Bengal; and *D. trilinearia*, Moore, ibid., Darjeeling.

Hyperythra trilineata, Moore, *l. c.* p. 619, Bengal.

Angerona pallicostaria, Moore, *l. c.* p. 620, Bengal.

Eurymene inustaria, Moore, *l. c.* p. 620, Bengal.

Odontoptera discospilata, Moore, *l. c.* p. 621, Bengal.

Selenia decorata, Moore, *l. c.* p. 621, pl. 32. fig. 9, Bengal.

Endropia basipuncta, Moore, *l. c.* p. 621, Bengal.

Crocalis (sic) *obliquaria*, *bivittaria*, *lentiginosaria*, and *angularia*, Moore, *l. c.* p. 622, Bengal.

Emmoes viridata, Moore, *l. c.* p. 623, Bengal; and *E. testacearia*, Moore, ibid., Darjeeling.

Pericallia kentaria, Grote & Robinson, Trans. Amer. Ent. Soc. i. p. 12, pl. 1. figs. 5 & 6, Atlantic States.

Azelina saturata, Walker, *l. c.* p. 196, Bogota (type of a new section in the genus).

Mergana bilineata, Moore, *l. c.* p. 624, Bengal.

Hemerophila. Moore (*l. c.*) describes the following new Indian species:—*H. cuprearia*, *nigrovittata*, and *interruptaria*, p. 626, and *H. humeraria*, p. 627, Bengal; *H. basistrigaria*, p. 626, and *H. retractaria*, p. 627, pl. 32. fig. 7, Darjeeling.

Cleora decussata, Moore, *l. c.* p. 628, pl. 33. fig. 4, Darjeeling; *C. rufomarginata* and *fimbriata*, Moore, ibid., and *C. megaspilaria*, *albidentata*, and *pannosaria*, Moore, *l. c.* p. 629, Bengal.

Boarmia obliterata and *perspicuata*, Moore, *l. c.* p. 630, and *B. contiguata*, Moore, *l. c.* p. 631, Bengal.

Boarmia demissaria, Walker, *l. c.* p. 197, Bogota.

Amphidasis hüberaria, Ballion, Horæ Soc. Ent. Ross. iv. p. 29, pl. 1. fig. 1, Western Siberia.

Tephrosia dentilineata, Moore, *l. c.* p. 631, Bengal.

Hypochroma viridaria and *basiflavata*, Moore, *l. c.* p. 632, *H. varicoloraria*, *tenebrosaria*, and *costistrigaria*, Moore, *l. c.* p. 633, and *H. leopardinata*, Moore, *l. c.* p. 634, Bengal; *H. irrorataria*, Moore, *l. c.* p. 632, Bengal and Silhet.

Bargosa fasciata, Moore, *l. c.* p. 634, pl. 32. fig. 8, Bengal.

Geometra dentisignata, Moore, *l. c.* p. 636, Darjeeling; *G. vittata*, Moore, ibid., Bengal.

Thalassodes ophthalmicata and *sinuata*, Moore, *l. c.* p. 637, Bengal.

Comibæna sanguilineata, *hyalinata*, and *maculata*, Moore, *l. c.* p. 638, and *C. fenestraria*, Moore, *l. c.* p. 639, Bengal; and *C. chalybeata*, Moore, ibid., Darjeeling.

Agathia quinaria, Moore, *l. c.* p. 639, and *A. arcuata*, Moore, *l. c.* p. 640, Bengal.

Anisodes sanguinaria, *pallivittata*, *similaria*, and *diffusaria*, Moore, *l. c.* p. 641, and *A.? vinacearia*, Moore, *l. c.* p. 642, Bengal.

Hyria bicolorata, Moore, *l. c.* p. 642, *H. ornata*, and *H.? pluristrigata*, Moore, *l. c.* p. 643, Bengal; and *H. trilineata*, Moore, *l. c.* p. 642, Darjeeling.

Acidalia bicaudata, Moore, *l. c.* p. 643, pl. 33. fig. 12, and *A. cerata*, Moore, ibid., Darjeeling; *A. tephrosaria*, Moore, ibid., and *A.? gemmifera*, Moore, *l. c.* p. 644, Bengal.—*Acidalia graciliata*, Mann, Verh. zool.-bot. Ges. in Wien, xvii. p. 841, Tyrol.—*Acidalia subtilata*, Christoph, Stett. ent. Zeit. 1867, p. 236, Sarepta.—*Acidalia fulvicosta*, Walker, *l. c.* p. 197, Bogota.—*Acidalia okakaria*, Packard, Proc. Bost. Soc. N. H. xi. p. 43, Labrador.

Timandra subobliquaria, Moore, *l. c.* p. 644, Bengal.

Somatina plurilineata and *S.? pictaria*, Moore, *l. c.* p. 645, Darjeeling.

Argyris insignata, Moore, *l. c.* p. 645, Bengal.

Micronia simpliciata, Moore, *l. c.* p. 646, Bengal.

Micronia metargyria, Walker, *l. c.* p. 198, Bogota.

Erosia cervinaria, Moore, *l. c.* p. 646, Bengal.

Cabera margarita, Moore, *l. c.* p. 647, Bengal.

Macaria perspicuaria, Moore, *l. c.* p. 647, Bengal.

Macaria sex-maculata, Packard, *l. c.* p. 44, Labrador (Square Island).

Scodiona hispanaria, Millière, Ann. Soc. Linn. Lyon, xiv. p. 373, pl. 79. figs. 5–9, Spain.

Fidonia cembraria, Motschulsky, Bull. Soc. Nat. Mosc. xxxix. 2. p. 119, Amour.

Aspilates obliquaria, Moore, *l. c.* p. 649, Bengal.

Caprilia specularia, Moore, *l. c.* p. 649, pl. 33. fig. 11, Assam.

Osicerda costimaculata and *trinotaria*, Moore, *l. c.* p. 650, Bengal.

Rhyparia maculata, Moore, *l. c.* p. 651, Bengal.

Abraxas pardaria, *A. picaria*, and *A.? tenebraria*, Moore, *l. c.* p. 652, Bengal; and *A. irrorata*, Moore, ibid., Darjeeling.

Oporabia macularia, Moore, *l. c.* p. 653, Bengal.

Larentia variegata, Moore, *l. c.* p. 653, Bengal; and *L. ærata*, Moore, *l. c.* p. 654, Darjeeling.

Eupithecia semicirculata and *ferfuginaria*, Moore, *l. c.* p. 654, Darjeeling; and *E. costipannaria*, Moore, ibid., Bengal.—*Eupithecia unedonata*, Mabille, Ann. Soc. Ent. Fr. 4e sér. vii. p. 649, pl. 14. fig. 3 (with larva), Corsica.—*Eupithecia silenicolata*, Mabille, Ann. Soc. Ent. Fr. 4e sér. vi. p. 562, pl. 8. fig. 9, Corsica.—*Eupithecia multiflorata*, Millière, *l. c.* p. 302, pl. 71. figs. 8–13, south of France.—*Eupithecia luteata*, Packard, *l. c.* p. 46, Labrador (Caribou Island).—*Eupithecia biornata*, Christoph, Stett. ent. Zeit. 1867, p. 238, Sarepta.

Souris decussata, Moore, *l. c.* p. 655, pl. 33. fig. 10, Bengal.

Melanippe catenaria, Moore, *l. c.* p. 655, pl. 33. fig. 9, and *M. cupreata*, Moore, ibid., Bengal.

Anticlea cuprearia, Moore, *l. c.* p. 656, Darjeeling.

Coremia mediovittaria, Moore, *l. c.* p. 656, Darjeeling.

Coremia labradorensis, Packard, *l. c.* p. 46 (Caribou Island).

Scotosia vitreata, Moore, *l. c.* p. 656, and *S. venimaculata*, Moore, *l. c.* p. 657, Bengal; *S. lativittaria* and *obliquisignata*, Moore, ibid., Darjeeling.

Psyra similaria, Moore, *l. c.* p. 659, pl. 33. fig. 1, Darjeeling.

Cidaria. Moore (*l. c.*) describes the following new species of this genus:—*C. argentilineata*, p. 660, pl. 33. fig. 5, *C. aurantiaria*, p. 661, pl. 33. fig. 8, *C. signata*, p. 661, *C. viridata*, ibid., *C. subapicaria*, p. 663, and *C. chalybearia*, ibid., Darjeeling; *C. reticulata*, p. 662, *C. cinereata*, ibid., *C. calamistrata*, ibid., pl. 33. fig. 6, *C. trisignata*, p. 663, *C. obscurata*, ibid., pl. 33. fig. 7, *C. cervinaria*, p. 664, and *C. aurata*, ibid., Bengal.

Cidaria. Packard (*l. c.*) describes the following new species from Labrador:—*C. brunneata*, p. 47 (Caribou Island), *C. nubilata*, p. 48, *C. nigro-fasciata*, p. 49 (Caribou Island), *C. strigata*, p. 50 (Caribou Island), and *C. aurata*, p. 51 (Okak and Caribou Island, also in the United States).

Eubolia obvallaria, Mabille, Ann. Soc. Ent. Fr. 4e sér. vi. p. 563, pl. 8. fig. 8, Corsica.

Pyralidæ.

Zeller publishes (Stett. ent. Zeit. 1867, pp. 188–195) a notice of the part of Heinemann's work on German Lepidoptera treating of the Pyralidæ. (See 'Record,' 1865, p. 564.) After some general observations, Zeller makes the following remarks upon particular points:—*Botys ostrinalis*=*purpuralis*, var.; *Botys stachytalis* should be *stachydalis* *; *Psamotis* should be *Psammotis*; *Pa-*

* Zeller did not consult Ahrens's Fauna, in which the species was first described; in it the name stands *stachydalis* in the text and *stachytalis* on the plate, which may account for the different spellings of authors.

raponyx—an unintelligible note as it stands, but meaning that the name should be spelled *Parapoyx*; *Acentropus* is correctly placed; *Thinasotia* stands as *Thisanotia* in Hübner, and should be *Thysanotia*; the two species (*alpinellus* and *cerussellus*) referred to this genus differ in the venation and some other characters of the wings, and Zeller remarks on the number of genera that may be established at the expense of *Crambus* if these characters are to be accepted; *Agriphila deliellus*, the generic distinctness is doubtful; *Pempelia*, *Etiella*, and *Salebria*, characters remarked on; the sinking of *Acrobasis* in *Myelois* seems unnecessary; *Stenoptycha* is already employed = *Euzophera* (Zell.); the larva of *Sten. cinerosella* lives on *Absinthium*; *Homœosoma nimbella* probably includes several species, or else *H. nimbella* and *nebulella* form one species; *Semnia* is the generic name of a Brazilian form—the European genus = *Ematheudes* (Zell.).

A. Gartner (Verh. naturf. Ver. in Brünn, iv. pp. 94–122) publishes a list of the species of this group found in the environs of Brünn, amounting in all to 122, namely Crambina 115 and Pyralidina 7. The former when compared with the European and German species are as 1 : 4 and nearly as 1 : 2, whilst of the latter nearly all (7 : 9) of the German and Swiss species occur in the district of Brünn, but these form only a small proportion of the European species (33). Notes on the habits of most of the species are given, and the larvæ of the following species are more particularly characterized:—*Botys cespitalis* (W. V.), *B. palealis* (W. V.), *Cryptoblabes rutilella* (H.-Sch.), *Alispa angustella* (Hübn.), *Homœosoma hornigii* (Led.), *Ephestia elutella* (Hübn.), and *E. interpunctella* (Hübn.).

Stainton (Brit. Butt. & Moths) figures the following species of this group:—*Pyralis costalis* (pl. 12. fig. 1), *Pyrausta purpuralis* (fig. 2), *Diasemia literalis* (fig. 3), *Cataclysta lemnata* (figs. 4 & 5), *Botys urticata* (fig. 6), *Spilodes cinctalis* (fig. 7), *Acrobasis consociella* (pl. 13. fig. 1), *Cryptoblabes bistriga* (fig. 2), *Pempelia carnella* (fig. 3), *Pempelia formosa* (fig. 4), *Crambus cerussellus* (fig. 5), *C. hamellus* (fig. 6), and *C. pinetellus* (fig. 7).

Moore (Proc. Zool. Soc. 1867, pp. 81–98) gives the following indications of the synonymy of species and genera belonging to this group:—*Neviasca* and *Pradiota* (Walk.) = *Episparis* (Walk.); *Episparis signata* (Walk.) = *varialis* (Walk.); *Pradiota ennomocoides* (Walk.) = *sejunctaria* (Walk.); *Oligostigma tripunctalis* (Walk.) = *crassicornalis* (Led.); *Botys flexissimalis* (Walk.) = *Zebronia perspicualis* (Walk.), referred to *Lepyrodes*; *Z. inscriptalis* (Walk.) = *bistrigalis* (Walk.), referred to *Pycnarmon*; *Synclera retinalis* (Led.) and *Glyphodes univocalis* (Walk.) = *traducalis* (Zell.); *Phakellura gazorialis* (Guen.) = *indica* (Saund.) = *Phak. indicalis* (Moore); *Botys evaxalis* (Walk.) = *Astura punctiferalis* (Guen.); *B. megapteralis* (Walk.) = *unitalis* (Guen.); *Zebronia salomealis* (Walk.) = *B. multilinealis* (Guen.); *Botys monesusalis* and *phanasalis* (Walk.) = *Dysallacta negatalis* (Walk., Led.).

Zeller notices (Stett. ent. Zeit. 1867, pp. 365–385, also Trans. Ent. Soc. 3rd ser. v. pp. 453–466) the species of this family collected by Pickard Cambridge during his travels in the east. Zeller remarks upon the early period of the year at which many of the known species were taken. The number of oriental species noticed is 24, of which 14 are described as new. Four species taken in Corfu are also noticed. Zeller describes (*l. c.* p. 370) a variety of *Crambus cassentiniellus* (Mann) from the Lebanon, and remarks on the peculiarities of the specimens of other species. He proposes to substitute the

name *Euzophera* for *Stenoptycha*=*Melia* (Heinem.), the latter name being preoccupied (*l. c.* p. 377); he likewise proposes the new name *Emathesides* for *Semnia* (Hein.) in case of that genus being adopted.

Zeller (Stett. ent. Zeit. 1867, p. 390) records the occurrence of *Crambus malacellus* (Dup.) in India, and notices (*l. c.* pp. 397–401) the characters of 5 species of *Nephopteryx* (*N. roborella, illyriella, meliella, metzneri*, and *poteriella*), which agree, in having more or less translucent hind wings, with his new species *N. clientella*.

G. Allard describes and figures a variety (*algiralis*) of *Spilodes palealis* from Algeria (Ann. Soc. Ent. Fr. 4e sér. vii. p. 321, pl. 6. fig. 4).

Botys (*Rhodaria*) *stigmatalis* (Walk.) is described and figured by Grote & Robinson (Trans. Amer. Ent. Soc. i. p. 16, pl. 2. fig. 11).

Scoparia ingratella (Zell.). Its occurrence in England noticed by Knaggs, Ent. M. Mag. iv. p. 61.

Ebulea catalaunalis (Dup.) occurs in England, according to W. C. Boyd, Ent. M. Mag. iv. p. 152. Figured by Knaggs, Ent. Ann. 1868, Front. fig. 4.

Mabille (Ann. Soc. Ent. Fr. 4e sér. vi. pp. 563–564) notices the habits of various species of this family observed by him in Corsica.

Spilodes sticticalis (Linn.). Larva described by Hellins, Ent. M. Mag. iii. p. 260.

The larvæ of *Herminia griscalis* and *Pionea margaritalis* are described by Newman, Entomologist, iii. pp. 223 & 224.

Phakellura gazorialis (Guen.). The larva noticed by G. Semper, Verh. zool.-bot. Ges. in Wien, xvii. p. 702.

J. Angus records the breeding of *Helia americalis* from the nest of a *Bombus*. Amer. Nat. i. p. 157.

Goureau (Insectes nuisibles) describes the characters and habits of several species of this group, namely:—*Aglossa pinguinalis*, as feeding on fatty substances (pp. 116–118); *A. cuprealis* (pp. 118–119), as destructive to dried animal substances; *Galleria cereana* and *alvearia* (pp. 120–124), as injurious to bee-hives; and *Ephestia elutella* (pp. 125 & 126), as feeding on dried fruits, &c.

New genera:—

Magiria, g. n., Zeller, Stett. ent. Zeit. 1867, p. 392. Allied to *Salebria*; antennæ ♂ sinuate above the base, the sinus with long scales; labial palpi ♂ long, covering the forehead above, with joint 2 dilated, spoon-shaped, ♀ cylindrical, porrect. Sp. *M. imparella*, sp. n., Zeller, *l. c.* p. 393, pl. 2. fig. 2, East Indies.

Cereprepes, g. n., Zeller, *l. c.* p. 401. Allied to *Acrobasis*; antennæ in ♂ pectinated on one side, naked at apex, with a scaly tubercle above the basal joint; labial palpi ascending. Sp. *C. patriciella*, sp. n., Zell. *l. c.* p. 402, pl. 2. fig. 4, East Indies.

Casperia, g. n., Walker, *l. c.* p. 194. Allied to *Mesopia*; palpi reflexed over thorax, joint 2 fringed, 3 fasciculate, scarcely shorter than 2; anterior legs densely fasciculate; anterior wings acute, posterior with outer margin subangulate. Sp. *C. erebipennis*, sp. n., Walk. *l. c.* p. 194, Bogota.

Talapa, g. n., Moore, Proc. Zool. Soc. 1867, p. 82. Allied to *Hypena*; ♀ robust; palpi porrect, compressed, pilose, joint 2 curved upwards and out-

wards; joint 3 two-thirds length of 2; fore wings broad, acute, costa straight. Sp. *T. caliginosalis* = *Remigia caliginosa* (Walk.), pl. 7. fig. 6.

Anoratha, g. n., Moore, *l. c.* p. 82. Allied to *Hypena*; slender; palpi porrect, long, joint 2 straight, three times as long as 3; fore wings more or less falcate, exterior margin slightly angled; hind wings long, rather narrow. Sp. *A. costalis*, sp. n., Moore, *l. c.* p. 82, pl. 7. fig. 10, Darjeeling. (In the references to the figures of this species and *Pycnarmon virgatalis* the numbers are reversed.)

Apsarasa, g. n., Moore, *l. c.* p. 665. (*Gallerides*?) Palpi stout, joint 2 broad, covered with dense hair-like scales, 3 naked; head broad, with a short acute point on the vertex; abdomen long, tufted; legs stout, intermediate tibiæ with two, hind tibiæ with four spurs, spurs unequal; fore wings elongate, rounded at apex; hind wings short, trigonate, outer margin excavated near apex. Sp. *Apatela radians* (Westw.).

Brihaspa, g. n., Moore, *l. c.* p. 666. Allied to *Scirpophaga*; labial palpi slender, smooth, pointed, joint 2 twice as long as 3; head conical; abdomen attenuated, compressed, tufted; hind legs very long; tibiæ with four long spurs; fore wings acute at apex, outer margin convex, oblique; hind wings produced at apex; cilia broad. Sp. *B. atrostigmella*, sp. n., Moore, *l. c.* p. 666, pl. 33. fig. 13, Darjeeling.

Ramila, g. n., Moore, *l. c.* p. 667. Allied to preceding; labial palpi slender, joints 2 and 3 nearly equal; maxillary palpi nearly as long as labial, tufted at apex; legs moderate; fore wings slightly falcate, outer margin straight; hind wings trigonate. Sp. *R. marginella*, sp. n., Moore, *l. c.* p. 667, pl. 33. fig. 16, Darjeeling.

New species:—

Episparis tortuosalis, Moore, *l. c.* p. 81, pl. 7. fig. 5, Bengal.

Hypena. Moore (*l. c.*) describes the following new Bengalese species of this genus:—*H. tenebralis*, *cervinalis*, and *costinotalis*, p. 83, *H. castanealis*, *rectivittalis*, *basistrigalis*, and *divisalis*, p. 84.

Hypena megaspila, Walker, Journ. Linn. Soc. ix. p. 193, Bogota.

Lametia retusa, Walker, *l. c.* p. 193, Bogota.

Herminia hadenalis, *ochracealis*, and *H.? albirenalis*, Moore, *l. c.* p. 85, Darjeeling.

Mastygophora? scopigeralis, Moore, *l. c.* p. 86, Bengal.

Echana plicalis, Moore, *l. c.* p. 86, pl. 7. fig. 7, Darjeeling.

Locastra cuproviridalis, Moore, *l. c.* p. 87, Darjeeling.

Bertula brevivittalis and *stigmatalis*, Moore, *l. c.* p. 87, Bengal; *B. chalybealis*, Moore, ibid., pl. 7. fig. 8, Darjeeling.

Bocana basalis and *viridalis*, Moore, *l. c.* p. 88, and *B. murinalis*, Moore, *l. c.* p. 89, Bengal; *B. quadrilinealis*, Moore, *l. c.* p. 88, Darjeeling.

Asopia unimacula, Grote & Robinson, Trans. Amer. Ent. Soc. i. p. 14, pl. 2. fig. 8, and *A. anthœcioides*, Grote & Rob. *l. c.* p. 15, pl. 2. fig. 9, Atlantic States.

Botys laticlavia, Grote & Rob. *l. c.* p. 17, pl. 2. fig. 12, *B. cinerosa*, Grote & Rob. *l. c.* p. 18, pl. 2. fig. 13, *B. generosa*, Grote & Rob. *l. c.* p. 20, pl. 2. fig. 10, *B. posticata*, Grote & Rob. *l. c.* p. 22, pl. 2. fig. 25, *B. marculenta*, Grote & Rob. *l. c.* p. 23, pl. 2. fig. 21, and *B. plectilis*, Grote & Rob. *l. c.* p. 27, pl. 2. fig. 17, Pennsylvania; *B. haruspica*, Grote & Rob. *l. c.* p. 19, pl. 2. fig. 14, and *B. gra-*

cilis, Grote & Rob. *l. c.* p. 25, pl. 2. fig. 15, Massachusetts to Pennsylvania; *B. ventralis*, Grote & Rob. *l.c.* p. 21, pl. 2. fig. 23, *B. citrina*, Grote & Rob. *l. c.* p. 23, pl. 2. fig. 20, New York to Pennsylvania; *B. insularis*, Grote & Rob. *l. c.* p. 24, pl. 2. fig. 24, Cuba; *B. coloradensis*, Grote & Rob. *l. c.* p. 25, pl. 2. fig. 18, Colorado; *B. adipaloides*, Grote & Rob. *l. c.* p. 26, pl. 2. fig. 19, Massachusetts to Texas; *B. diffissa*, Grote & Rob. *l. c.* p. 19, pl. 2. fig. 16, Louisiana.

Botys cultralis, Staudinger, Stett. ent. Zeit. 1867, p. 108, Caucasus; *B.* (*Pyrausta*) *trimaculalis*, Staud. *l. c.* p. 109, Amasia.

Botys accolalis, Zeller, Stett. ent. Zeit. 1867, p. 190, Vienna.

Botys plagalis, Moore, *l. c.* p. 96, Darjeeling.

Thalpochares pegani, Becker, Bull. Soc. Nat. Mosc. xl. i. p. 107, near Astrachan.

Lipocosma albolineata, Grote & Robinson, *l. c.* p. 28, pl. 2. fig. 22, Pennsylvania.

Simaethis ægyptiaca, Zeller, Stett. ent. Zeit. 1867, p. 366, and Trans. Ent. Soc. 3rd ser. v. p. 461, pl. 24. fig. 1, Cairo.

Schœnobius niloticus, Zeller, *l. c.* p. 397, and Trans. Ent. Soc. *l.c.* p. 462, pl. 24. fig. 2, Alexandria.

Scopula glacialis, Packard, Proc. Bost. Soc. N. H. xi. p. 52, Labrador (Hopedale).

Pyrausta borealis, Packard, *l. c.* p. 53, Labrador (Square Island).

Hoterodes cinerealis, Moore, *l. c.* p. 94, Darjeeling.

Filodes nigrolinealis and *octomaculalis*, Moore, *l. c.* p. 95, Bengal.

Botyodes flavibasalis, Moore, *l. c.* p. 96, Bengal.

Aglossa argentalis, Moore, *l. c.* p. 89, Darjeeling.

Hydrocampa pulchralis, Moore, *l. c.* p. 90, Darjeeling.

Pycnarmon zebralis, Moore, *l. c.* p. 91, pl. 7. fig. 12, Darjeeling; *P. virgatalis*, Moore, *l. c.* p. 92, pl. 7. fig. 9, Darjeeling.

Glyphodes lacustralis, Moore, *l. c.* p. 93, pl. 7. fig. 11, Bengal.

Scoparia. Knaggs (Ent. M. Mag. iv.) describes the following species of this genus from New Zealand:—*S. feredayi* and *rakaiensis*, p. 80, and *S. ejuncida* and *exilis*, p. 81.

Scoparia ulmella (Dale, MS.), Knaggs, Ent. M. Mag. iii. p. 217 (cum fig.), Dorsetshire.

Eudorea? frigidella, Packard, *l. c.* p. 53 (Caribou Island), and *E.? albisinuatella*, Pack. ibid. (Okak), Labrador.

Crambus unistriatellus, Packard, *l. c.* p. 54 (Caribou Island), and *C. argillaceellus*, Pack. ibid. (Square Island), Labrador.—*Crambus argentarius*, Staudinger, *l. c.* p. 109, Ural.—*Crambus biarmicus*, Tengström, Horæ Soc. Ent. Ross. iii. p. 49, pl. 2. figs. 1 & 2, North Russia.—*Crambus parallelus*, Zeller, Stett. ent. Zeit. 1867, p. 389, pl. 2. fig. 1, Darjeeling.

Calamotropha hierichuntica, Zeller, *l. c.* p. 368, and Trans. Ent. Soc. *l. c.* p. 4, pl. 23. fig. 1, valley of the Jordan.

Eromene cambridgei, Zeller, *l. c.* p. 370, and Trans. Ent. Soc. *l. c.* p. 463, pl. 24. fig. 3, Minyeh.

Pempelia (*Salebria*) *leucophæella*, Zeller, *l. c.* p. 390, Calcutta.—*Pempelia erberi*, Mann, *l. c.* p. 845, Corfu.—*Pempelia* (*Salebria*) *psammenitella*, Zeller, *l. c.* p. 372, and Trans. Ent. Soc. *l. c.* p. 463, pl. 24. fig. 4, Lower Egypt.

Nephopteryx (?) *scabida*, Zeller, *l. c.* p. 373, and Trans. Ent. Soc. *l. c.* p. 464, pl. 24. fig. 5, and *N.* (*Ceutholopha*) *isidis*, Zell. *l. c.* p. 375, and Trans. Ent.

Soc. *l. c.* p. 464, pl. 24. fig. 6, Egypt.—*Nephopteryx pulvillella*, Zeller, *l. c.* p. 394, pl. 2. fig. 3, East Indies; *N. clientella*, Zell. *l. c.* p. 396, Calcutta.

Anerastia laterculella, Zeller, *l. c.* p. 403, *A. sceletella*, Zell. *l. c.* p. 404, and *A. opificella*, Zell. *l. c.* p. 406, Calcutta.

Myelois aurorella, Christoph, Stett. ent. Zeit. 1867, p. 236, Sarepta.

Myelois monogrammos, Zeller, *l. c.* p. 376, and Trans. Ent. Soc. *l. c.* p. 455, pl. 23. fig. 2, valley of the Jordan and Amasia.

Zophodia remotella, Mann, *l. c.* p. 846, Asia Minor, Tinos, and Dalmatia.

Nyctegretis corsica, Mann, *l. c.* p. 847, Ajaccio and Syracuse.

Euzophera pilosella*, Zeller, *l. c.* p. 377, and Trans. Ent. Soc. *l. c.* p. 456, pl. 23. fig. 3, Jordan and Jerusalem; *E. samaritanella*, Zell. *ll. cc.* p. 379, and p. 456, pl. 23. fig. 4, *E. faustinella*, Zell. *ll. cc.* p. 380, and p. 457, pl. 23. fig. 5, and *E. favorinella*, Zell. *ll. cc.* p. 381, and p. 457, pl. 23. fig. 6, Jordan valley.

Ephestia tenebrosa, Zeller, *l. c.* p. 383, and Trans. Ent. Soc. *l. c.* p. 458, pl. 23. fig. 7, Jordan valley; *E. cahiritella*, Zell. *ll. cc.* p. 384, and p. 466, pl. 24. fig. 7, Cairo.

Propachys lineatis, Moore, *l. c.* p. 665, pl. 33. fig. 17, Darjeeling; *P. fascialis*, Moore, ibid., Bengal.

Tortricidæ.

A. Gartner (Verh. naturf. Ver. in Brünn, iv. pp. 123-163) records 187 species of this group as inhabitants of the immediate environs of Brünn, or considerably more than one-third of all the European species (520) and rather less than half the number of those inhabiting the whole of Germany and Switzerland (426). The habits of the species are indicated, and the larvæ of the following are particularly characterized:—*Tortrix gerningiana* (W. V.), *Conchylis manniana* (Fisch. v. R.), *C. dubitana* (Hübn.), *Grapholitha dimidiana* (Sod.), *G. conterminana* (H.-Sch.), *G. aspidiscana* (Hübn.), *G. æmulana* (Schläg.), *G. fœneana* (Linn.), *G. scutulana* (W. V.), *G. campoliliana* (Treits.), *G. derasana* (Hübn.), *G. badiana* (W. V.), *G. harpana* (Hübn.), *G. siculana* (Hübn.), *G. amplana* (Hübn.), and *G. flexana* (Zell.).

Stainton (Brit. Butt. & Moths, pl. 14) figures the following species:—*Antithesia corticana* (fig. 1), *Siderea achatana* (fig. 2), *Notocelia udmanniana* (fig. 3), *Dicrorhampha sequana* (fig. 4), *Anchylopera lundana* (fig. 5), *Crœsia forskaleana* (fig. 6), *Sericoris littoralis* (fig. 7), and *Calosetia nigromaculana* (fig. 8).

Tortrix croceana (Hübn.). Millière figures this species in all its stages. Ann. Soc. Linn. Lyon, xiv. p. 363, pl. 78. figs. 1-3.

Tyana callichlora (Walk.) is figured by Moore, Proc. Zool. Soc. 1867, pl. 33. fig. 14.

Knaggs redescribes his *Dicrorhampha flavidorsana*, Ent. M. Mag. iii. p. 176. The habits of the species are noticed by E. G. Meek, *l. c.* p. 186.

G. coronillella [illegible]*ma boscana* and *scabrana*. Notes on these species by H. d'Orpl. 13. fig. 2. M. Mag. iii. p. 187.

Grapholitha ravulana (H.-Sch.) occurs in Britain. Knaggs, Ent. M. Mag. iv. p. 61. Figured Ent. Ann. 1868, Front. fig. 2.

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* Proposed by the author in place of *Stenoptycha* = *Melia* (Heinem.).

Catoptria aspidiscana (Hübn.), its occurrence in Britain noticed by J. B. Hodgkinson, Ent. M. Mag. iv. p. 16.

C. G. Barrett notices some species of this family found feeding upon oak-galls. Ent. M. Mag. iv. p. 153.

The following species of this family are cited by Walsh as having been bred from willow-galls:—*Hedya salicicolana*, *H. saliciana*, *Crœsia gallivorana*, and *Peronea gallicolana* (Clemens). *Eurypteychia saligneana* (Clem.) was bred from a gall on the golden-rod (*Solidago*). Proc. Ent. Soc. Phil. vi. p. 272.

Pœdisca immundana (Fisch.). Kawall (Stett. ent. Zeit. 1867, pp. 119–120) describes the larva of this species, which he obtained in catkins of the alder. Its parasites are *Eubadizon pectoralis* (Gw.), *Microgaster amentarum* (Ratz.), and a second species of *Microgaster*.

A. Gartner (Verh. nat. Ver. Brünn, v.) describes the habits and transformations of *Conchylis dipoltana* (Hübn.), *l. c.* pp. 40–42, and *Grapholitha brunnichiana* (Fab.), *l. c.* pp. 42–44.

Chrosis euphorbiana (Treit.). Life-history described by Zeller, Ent. M. Mag. iv. p. 9.

Knaggs states that when the newly spun silk of leaf-rolling caterpillars is moistened by being breathed upon, it shrinks to half its length. Ent. M. Mag. iii. p. 279.

Stainton (Proc. Ent. Soc. 1867, pp. lxxxix & xc) notices the ravages of the cotton-moth in Egypt, and identifies it with *Earias siliquana* (H.-Sch.).

Frauenfeld publishes a notice upon the moth whose larva has committed such ravages upon the Egyptian cotton-crops, and which Stainton has identified with *Earias siliquana* (H.-Sch.). Frauenfeld doubts the correctness of this identification. His paper includes two reports from A. Ivanovitch, of Cairo, giving an account of the habits of the insect and its ravages. Verh. zool.-bot. Ges. in Wien, xvii. pp. 785–792.

New species:—

Tyana superba, Moore, Proc. Zool. Soc. 1867, p. 668, pl. 33. fig. 15, Darjeeling.

Tortrix lubricana, Mann, Verh. zool.-bot. Ges. in Wien, xvii. p. 842, Tyrol.

Coccyx vernana, Knaggs, Ent. M. Mag. iv. p. 122, Darenth Wood, Kent.

Sciaphila niveosana, Packard, Proc. Bost. Soc. N. H. xi. p. 55, Labrador.

Pandemis leucophaleratana, Packard, *l. c.* p. 56, Labrador (Hopedale).

Conchylis chalcana, Packard, *l. c.* p. 56, Labrador (Strawberry Harbour).

Conchylis roridana, Mann, *l. c.* p. 847, Grossglockner; *C. cœnosana*, Mann, *l. c.* p. 848, Hungary.

Penthina frigidana, Packard, *l. c.* p. 57, *P. tessellana*, Pack, *l. c.* p. 58, *P. fulvifrontana*, Pack. *l. c.* p. 58, and *P. murina*, Pack. *l. c.* p. 60, Labrador.

Grapholitha nebulosana, Packard, *l. c.* p. 61, Labrador (Strawberry Harbour).

Tineidæ.

Stainton (Brit. Butt. & Moths) figures the following [illegible] p. 463, group:—*Exapate gelatella* (pl. 15. fig. 1), *Chimabacche fagella*, *Tinea ochracella* (fig. 3), *Adela de geerella* (fig. 4), *Prays curtisellus* (fig. 5), *Psilocera quercana* (fig. 6), *Ypsolophus marginellus* (fig. 7), *Antispila pfeif-*

ferella (pl. 16. fig. 1), *Coleophora ochrea* (fig. 2), *Chrysoclista linnœella* (fig. 3), and *Lithocolletis roboris* (fig. 4).

Millière figures and describes (Ann. Soc. Linn. Lyon, xiv.) *Swammerdamia egregiella* (Dup.), p. 298, pl. 71. figs. 2–6, and *Depressaria ferulæ* (Zell.), p. 320, pl. 73. figs. 6, 7, with their preparatory states.

Stainton's 'Tineina of Syria and Asia Minor' has been noticed in general terms on p. 332. The total number of species, including those from the Caucasus &c., amounts to nearly 390, out of which 27 are described as new.

Frey has continued his Catalogue of the Swiss Microlepidoptera (Mitth. schweiz. ent. Ges. ii. pp. 169–186 and 286–303). He describes no new species, but indicates the following as new:—*Argyresthia submontana*, *l. c.* p. 183; *Butalis noricella*, *l. c.* p. 288; *Œcophora auromaculata*, *l. c.* p. 290; *Gelechia petrophilella*, *l. c.* p. 300; and *G. mariæ*, *l. c.* p. 302.

Steudel (Württ. naturw. Jahreshefte, xxiii. pp. 39–48) communicates some general remarks on the natural history of the Microlepidoptera of Würtemberg.

A. Gartner (Verh. naturf. Ver. in Brünn, iv. pp. 165–246) enumerates 271 species of this family as inhabiting the neighbourhood of Brünn, or only about one-fifth of the known European species. He includes *Fumea* in the family, and places *Micropteryx* in a distinct group. Notices of the larvæ or transformations of the following species are given by him:—*Xysmatodoma astrella* (H.-Sch.), *Tinea granella* (Linn.), *T. spretella* (W. V.), *Scardia choragella* (W. V.), *Choreutis dolosana* (Fisch. v. R.), *Depressaria cnicella* (Fisch.), *D. hypomarathri* (Nick.), *D. artemisiella* (H.-Sch.), *D. absinthiella* (H.-Sch.), *D. propinquella* (Treits.), *Carposina scirrhosella* (H.-Sch.), *Hypsolopha marginella* (Fab.), *Gelechia cauliginella* (Schmid), *G. scabidella* (Zell.), *Anacampsis biguttella* (H.-Sch.), *A. coronillella* (Tisch.), *A. ligulella* (W. V.), *A. nœviferella* (Zell.), *Parasia lapella* (Linn.), *P. carlinella* (Staint.), *Tichotripis festacella* (Hübn.), *Stagmatophora serratella* (Treits.), *Butalis chenopodiella* (Hübn.), *Colcophora vulpecula* (Zell.), *C. binotatella* (Zell.), *C. chamædryella* (Bruand), *C. nutantella* (Fr.), *C. flaviginella* (Zell.), *C. asteris* (H.-Sch.), *Lithocolletis fraxinella* (Mann), and *Tischeria angusticolella* (Zell.). A great number of the shorter notices of habits &c. are appended to the citations of other species.

Gelechia. Stainton (Nat. Hist. Tin. x.) gives a general account of this genus, of which he enumerates 231 species as inhabiting Europe and the basin of the Mediterranean. Of these, Stainton (*l. c.*) describes and figures the following 24:—*G. leucomelanella* (Zeller), p. 60, pl. 9. fig. 1; *G. cauligenella* (Schm.), p. 70, pl. 9. fig. 2; *G. costella* (Steph.), p. 78, pl. 9. fig. 3; *G. maculea* (Haw.), p. 90, pl. 10. fig. 1; *G. tricolorella* (Haw.), p. 102, pl. 10. fig. 2; *G. viscariella* (Staint.), p. 114, pl. 10. fig. 3; *G. fraternella* (Dougl.), p. 122, pl. 11. fig. 1; *G. fischerella* (Treit.), p. 132, pl. 11. fig. 2; *G. marmorea* (Haw.), p. 142, pl. 11. fig. 3; *G. maculiferella* (Dougl.), p. 154, pl. 12. fig. 1; *G. sequax* (Haw.), p. 170, pl. 12. fig. 3; *G. tæniolella* (Zell.), p. 182, pl. 13. fig. 1; *G. coronillella* (Treit.), p. 192, pl. 13. fig. 2; *G. albipalpella* (H.-Sch.), p. 202, pl. 13. fig. 3; *G. anthyllidella* (Hübn.), p. 210, pl. 14. fig. 1; *G. arundinetella* (Staint.), p. 220, pl. 14. fig. 2; *G. lathyri* (Staint.), p. 228, pl. 14. fig. 3; *G. bifractella* (Dougl.), p. 238, pl. 15. fig. 1; *G. inopella* (Zell.), p. 246, pl. 15. fig. 2; *G. brizella* (Treit.), p. 256, pl. 15. fig. 3; *G. pictella* (Zell.), p. 266, pl. 16. fig. 1; *G. cricinella* (Dup.), p. 276, pl. 16. fig. 2; *G. subocellea* (Steph.) p. 288, pl. 16. fig. 3, and 1 new species.

Schleich (Stett. ent. Zeit. 1867, pp. 452–455) discusses the characters and habits of *Gracilaria hofmanniella* (Staint.) and *G. imperialella* (Mann), the latter at greater length.

Tinea oleastrella (Millière) is said by Stainton to be most nearly allied to *Zelleria*. Proc. Ent. Soc. 1867, p. lxxvii.

Fallou notices a new species, probably belonging to the genus *Dissoctena* (Staud.), of which the larvæ were found at Fontainebleau. Bull. Soc. Ent. Fr. 1867, p. xlv.

Bond notices a gilded variety of *Adela degeerella*. Proc. Ent. Soc. 1867, p. xc.

Tinea cloacella. A coppery variety noticed by Stainton. Proc. Ent. Soc. 1865, p. 129.

Stainton (Ent. Ann. 1868, pp. 127–133) records the occurrence in Britain of *Solenobia conspurcatella* (Zell.), *Ypsolophus ustulellus* (Fab.), and *Opostega reliquella* (Zell.). He indicates the characters and mode of life of these species, and figures the first-named (Front. fig. 3).

Ypsolophus ustulellus (Fab.). Its occurrence in England recorded by E. Horton and A. Edmunds. Ent. M. Mag. iv. p. 152.

Bucculatrix artemisiella (Wocke) recorded as occurring in Britain by Knaggs, Ent. M. Mag. iv. p. 36.

Opostega reliquella captured in Britain. Stainton, Ent. M. Mag. iv. p. 140.

Stainton (Ent. Ann. 1868, pp. 134–155) publishes notes on the natural history of numerous species of this family observed by him in this country and on the continent. The species noticed are:—*Hyponomeuta egregiella* (Dup.), *Prays oleellus* (Boy. de F.), *Depressaria rutana* (Fab.), *Gelechia pinguinella* (Tr.), *G. figulella* (Staud.), *G. terrella* (W. V.), *G. lucidella* (Steph.) *G. arundinetella* (Zell.), *Ypsolophus trinotellus* (H.-Sch.), *Y. verbascellus* (W. V.), *Œcophora fuscescens* (Haw.), *Tinagma resplendellum* (Staint.), *Zelleria philyrella* (Mill.), *Gracilaria imperialella* (Mann), *Coleophora lixella* (Zell.), *Stathmopoda pedella* (Linn.), *Batrachedra præangusta* (Haw.), *Laverna decorella* (Steph.), *Chalybe* (*Psecadia*) *pyrausta*, and *Swammerdamia conspersella* (Tengstr.).

Gregson (Entomologist, iii.) publishes life-histories of *Yponomeuta padella*, p. 225, and *Depressaria carduella*, p. 269.

Gracilaria syringella. C. Healy publishes a life-history of this species. Ent. M. Mag. iv. pp. 148–150.

Goureau (Insectes nuisibles, pp. 127–133) describes the characters and habits of the species of this family which are injurious to cloth, feathers, and other dry animal substances, namely *Tinea tapetzella, sarcitella, pellionella*, and *flavifrontella*.

Acrolepia assectella. Stainton translates Breyer's account of the habits of this species, which he says is described by Goureau (Ins. nuisibles à l'Agric. p. 204) under the name of *Tinea vigeliella* (Dup.). It is distinct from *A. betuletella* (Curt.). Ent. M. Mag. iii. pp. 256–259.

Œgoconia quadripuncta. M'Lachlan notices some points in the habits of this species. Ent. M. Mag. iv. pp. 90, 91.

Cemiostoma scitella. The mode of pupation described by C. Healy. Ent. M. Mag. iv. pp. 161–162.

Nepticula decentella. Stainton notices the habits of this species. Ent. M. Mag. iv. pp. 28–29.

C. Healy notices the pupation of *Antispila pfeifferella*. Ent. M. Mag. iv. pp. 10–12.

Packard (Amer. Nat. i. pp. 423–427) describes the natural history of *Tinea flavifrontella*, the common clothes-moth of the United States.

A posthumous note by Wttewaal on the development of *Ochsenheimeria urella*? is published by Vollenhoven. Tijdschr. v. Ent. 2de ser. ii. pp. 23–25, pl. 1. figs. 7–9.

Depressaria ultimella (Staint.). Snellen describes the larva of this species and contrasts the venation of the hind wings in it and *D. nervosa*. Tijdschr. v. Ent. 2de ser. ii. pp. 26–30, pl. 1. figs. 10 and 11, and Ent. M. Mag. iv. pp. 126–129.

Gelechia fungivorella, *G. gallægenitella*, *G. salicifungiella*, and *Batracheda salicipomonella* (Clemens) are cited by Walsh (Proc. Ent. Soc. Phil. vi. p. 273) as inhabiting willow-galls.

Yponomeuta. Diorio describes (Atti Accad. Pont. Roma, xviii. p. 124) a supposed species of this genus, under the name of *Y. œnothriella*, as injurious to the grapes in the neighbourhood of Rome. He describes two forms, which Herrich-Schäffer compares to *Tinea cinerella* and *harrisella* (Fab.). Corr.-Blatt zool.-min. Ver. Regensb. xx. p. 142.

Stainton and Swanzy mention the finding of the larva of a *Tinea* in the horn of a Koodoo antelope. A similar case is mentioned by Trimen. Proc. Ent. Soc. 1867, p. cv.

Coleophora lixella. The habits of this species noticed by Stainton. Proc. Ent. Soc. 1867, p. lxxxvii.

Stainton (Stett. ent. Zeit. 1867, p. 80) remarks upon the larvæ of several species of *Gelechia*, and indicates his belief that *G. sepiella* (Steudel) is identical with *G. triannulella* (H.-Sch.).

Gelechia micella. The natural history of this species is described by Schleich, Stett. ent. Zeit. 1867, p. 451.

Coleophora argyrella (H.-Sch.). Christoph (Stett. ent. Zeit. 1867, pp. 245–246) describes the mode of life of this species, the larva of which feeds in the interior of the stems of *Alhagi camelorum*.

Schleich publishes (Stett. ent. Zeit. 1867, pp. 131–141) instructions for collecting and preparing specimens of Microlepidoptera, in which he discusses the methods recommended by previous authors.

Peyer-Imhoff describes his mode of setting the minute *Tineidæ*, in Bull. Soc. Ent. Fr. 1867, p. xxxv.

Ypsolophus? xylostei (Fab.) is described by A. Forel as injurious to the Colza plant in the Canton de Vaud (Bull. Soc. Vaud. Sci. Nat. ix. pp. 80–81).

New genera:—

Chilopselaphus, g. n., Mann, Verh. zool.-bot. Ges. in Wien, xvii. p. 849. Allied to *Holoscolia*; ocelli 0; joint 1 of antennæ elongate, with no tuft of hair; labial palpi very long, porrect, compressed, fringed at the edges; wings long, posterior deeply emarginate below the apex, anterior with median cell long, subcostal vein emitting 5 branches, transverse vein with 4 branches. Sp. *C. fallax*, sp. n., Mann, *l. c.* p. 850, near Ofen.

Meridarchis, g. n., Zeller, Stett. ent. Zeit. 1867, p. 407. Allied to *Gelechia*; labial palpi long, straight, porrect, pointed; posterior wings with short fringes,

not emarginate near apex. Sp. *M. trapeziella*, sp. n., Zell. *l. c.* p. 408, pl. 2. fig. 5, East Indies.

Hermogenes, g. n., Zeller, *l. c.* p. 409. Allied to *Hypsolophus*; joint 2 of labial palpi not tufted; anterior tibiæ and metatarsi widely hairy. Sp. *H. aliferella*, sp. n., Zell. *l. c.* p. 410, pl. 2. fig. 6, East Indies.

New species :—

Anchinia grandis, Stainton, Syrian Tineina, p. 54, Ak-Dagh.

Apiletria purulentella (Led. MS.), Stainton, *l. c.* p. 43, and *A. nervosa*, Stainton, *l. c.* p. 44, Jordan valley.

Atychia beryti, Stainton, *l. c.* p. 53, Beirut (=*A. nana*, Led. nec H.-Sch.).

Euspilapteryx redtenbacheri, Mann, Verh. zool.-bot. Ges. in Wien, xvii. p. 74, pl. 9. fig. 4, Croatia.

Tinea ankerella, Mann, *l. c.* p. 75, pl. 9. fig. 5, Hungary.

Tinea latiusculella, Stainton, *l. c.* p. 41, Sharon; and *T. subalbidella*, Staint. *l. c.* p. 42, Jerusalem.

Micropteryx elegans, Stainton, *l. c.* p. 42, Palestine.

Nemotois purpureus, Stainton, *l. c.* p. 42, Palestine.

Symmocha caliginella, Mann, *l. c.* p. 842, Tyrol.

Hyponomeuta lineatonotella, Moore, Proc. Zool. Soc. 1867, p. 669, pl. 33. fig. 18, Darjeeling.

Dasycera intermediella, Stainton, *l. c.* p. 54, Amasia.

Depressaria ramosella, Stainton, *l. c.* p. 53, Caucasus.

Depressaria feruliphila, Millière, *l. c.* p. 317, pl. 73. figs. 1–3 (all stages), south of France; and *D. nodiflorella*, Mill. *l. c.* p. 322, pl. 73. figs. 8–11 (all stages), south of France.

Gelechia farinosæ, Stainton, Nat. Hist. Tin. x. p. 164, pl. 12. fig. 2, near Zurich.—*Gelechia antirrhinella*, Millière, *l. c.* p. 382, pl. 80. figs. 6–8 (all stages), Ax-sur-Ariége.—*Gelechia nitidula*, Stainton, Syrian Tineina, p. 44, Plains of Jordan; *G. subdiminutella*, Staint. *l. c.* p. 45, Jaffa and Plains of Jordan.—*Gelechia petasitis*, sp. n., Pfaffenzeller, Stett. ent. Zeit. 1867, p. 79, Hofmann, Stett. ent. Zeit. 1867, p. 201, Bavaria; *G. chrysanthemella*, Hofm. *l. c.* p. 202, and *G. albifemorella*, Hofm. *l. c.* p. 204, Germany.—*Gelechia petiginella*, Mann, *l. c.* p. 843, Tyrol.

Gelechia trimaculella, Packard, Proc. Bost. Soc. N. H. xi. p. 61, Labrador.

Gelechia petasitella, Staudinger, Stett. ent. Zeit. 1867, p. 211, Bavaria,= *petasitis* (Pfaffenz.).

Phyllobrostis hartmanni, Staudinger, *l. c.* p. 212, Bavaria.

Hypsolophus siewersiellus, Christoph, Stett. ent. Zeit. 1867, p. 239, Sarepta.

Œcophora frigidella, Packard, *l. c.* p. 62, Labrador.

Œcophora coturnella, Mann, *l. c.* p. 843, Tyrol.—*Œcophora icterinella*, Mann, *l. c.* p. 852, Dalmatia.—*Œcophora fuscofasciata*, Stainton, *l. c.* p. 48, Palestine.

Pleurota filigerella, Mann, *l. c.* p. 851, Dalmatia; *P. contristatella*, Mann, ibid., Syra.—*Pleurota submetricella*, Stainton, *l. c.* p. 46, and *P. elegans*, Staint. *l. c.* p. 47, Plains of Jordan.

Tinagma grisescens, Stainton, *l. c.* p. 51, Palestine.

Gracilaria juglandella, Mann, *l. c.* p. 844, Tyrol.

Gracilaria magnifica, Stainton, *l. c.* p. 56, Amasia.

Hypatima latiusculella (Mann, MS.), Stainton, *l. c.* p. 55, Brussa.

Ornix impressipennella, Bilimek, Verh. zool.-bot. Ges. in Wien, xvii. p. 903, Mexico (Cave of Cacahuamilpa).

Chauliodus æquidentellus, Hofmann, *l. c.* p. 206, Germany.

Chauliodus iniquellus, Wocke, Stett. ent. Zeit. 1867, p. 208, and *C. strictellus*, Wocke, *l. c.* p. 209, Breslau.

Nepticula lediella, Schleich, Stett. ent. Zeit. 1867, p. 449, Prussia.

Bucculatrix albella, Stainton, *l. c.* p. 51, Plains of Jordan.

Butalis subflabella, Stainton, *l. c.* p. 48, Beirut and Hebron; *B. albidella*, Staint. *l. c.* p. 50, Plains of Jordan; *B. subcerariella*, Staint. *l. c.* p. 55, Bosz-Dagh; and *B. tenuivittella*, Staint. ibid., Brussa.

Coleophora longicostella, Stainton, *l. c.* p. 51, Plains of Jordan; *C. amasicla*, Staint. *l. c.* p. 56, Amasia; *C. caucasica*, Staint. *l. c.* p. 57, Caucasus; and *C. phlomidis*, Staint. ibid., Amasia.

Pterophoridæ.

Zeller publishes (Stett. ent. Zeit. 1867, pp. 321–339) an abstract of Wallengren's paper on the Scandinavian species of this group. He remarks that the characters given by Wallengren for the *Pterophoridæ* as opposed to the *Alucitina* do not apply to all the genera referred to the former, the essential distinction of which he expresses as follows:—"Hind wings in repose entirely concealed beneath the narrow fore wings which stand off widely from the body." Zeller accepts Wallengren's determination of the Linnean species *Alucita monodactyla* and *pterodactyla*, of which the former is said to be identical with *Pt. pterodactylus* (auct.), and the latter with *fuscus* (auct.), but thinks that, unless the Linnean collection confirms Wallengren's view, his identification of *A. tesseradactyla* (Linn.) with *fischeri* (Zell.) is scarcely admissible. *P. ulodactylus* (Zett.) = *cosmodactylus* (H.-Sch.) = *acanthodactylus* (Hübn.), var. Zeller gives (*l. c.* pp. 331–332) a translation of Wallengren's table of genera (which amount to 9 under the true *Pterophoridæ*), and subsequently cites the species referred to them, 27 in number. These genera are *Cnæmidophorus* (Wall.) altered to *Cnemidophorus* by Zeller, sp. *rhododactylus* (W. V.); *Platyptilus* (Zell.), sp. *ochrodactylus* (Hübn.) [upon which Zeller remarks that Wallengren's diagnosis includes 2 nearly allied species, namely *ochrodactylus* (Hübn., H.-Sch., Zell.) = *dichrodactylus* (Mühl.) and *bertrami* Rössl.), so that it is doubtful which form inhabits Scandinavia; Zeller also notices an allied North-American form named *bischoffii* by Schläger], *zetterstedtii* (Zell.), *nemoralis* (Zell.), *gonodactylus* (W. V.), and *tesseradactylus* (Linn.); *Amblyptilus* (H.-Sch.), sp. *acanthodactylus* (Hübn.); *Oxyptilus* (Zell.), sp. *pilosellæ* (Zell.), *hieracii* (Zell.), *ericetorum* (Zell.), *obscurus* (Zell.), *didactylus* (Linn.) = *trichodactylus* (Zell.), and *bohemani* (Zell. MS.); *Mimæseoptilus* (Wall.) changed to *Mimeseoptilus* by Zeller, sp. *mictodactylus* (W. V.) = *pelidnodactylus* (Stein), *serotinus* (Zell.), *pterodactylus* (Linn.), and *paludicola* (Wall.); *Oidæmatophorus* (Wall.) changed to *Œdematophorus* by Zeller, sp. *lithodactylus* (Tr.); *Pterophorus* (Geoff.), sp. *monodactylus* (Linn.); *Leioptilus* (Wall.) changed to *Lioptilus* by Zeller, sp. *scarodactylus* (Hübn.), *tephradactylus* (Hübn.), *microdactylus* (Hübn.), *osteodactylus* (Zell.) = *microdactyla* (Zett.), and *brachydactylus* (Koll.); *Aciptilus* (Hübn.), sp. *tetradactylus* and *pentadactylus* (Linn.). The only Scandinavian species of *Alucita* is *A. hexadactyla* (Linn.) = *polydactyla* (Hübn., Zell.).

Stainton (Brit. Butt. & Moths, pl. 16) figures *Pterophorus acanthodactylus* (fig. 5), *P. pterodactylus* (fig. 6), and *Alucita polydactyla* (fig. 7).

Zeller (Stett. ent. Zeit. 1867, pp. 385–387) notices 6 species of this group collected by O. Pickard Cambridge in the east. One of them is described as new; another, a *Platyptilus*, is indicated without a specific name, its condition not permitting its precise determination. See also Trans. Ent. Soc. 3rd ser. v. pp. 459–460.

Zeller (Stett. ent. Zeit. 1867, p. 414) notices an Indian variety of *Pterophorus* (*Aciptilus*) *baptodactylus* (Zell.).

A. Gartner (Verh. naturf. Ver. in Brünn, iv. pp. 247–258) enumerates 20 species of this group as found in the neighbourhood of Brünn. He gives notes on the habits and larvæ of all the species, but particularly notices the following:—*Platyptilus gonodactylus*, *Oxyptilus hieracii*, *O. pilosellæ*, *Pterophorus stigmatodactylus*, *P. pterodactylus*, *P. scarodactylus*, *P. inulæ*, *P. microdactylus*, and *Aciptilus xanthodactylus*.

J. Hellins notices the habits of *Pterophorus osteodactylus*. Ent. M. Mag. iv. p. 157.

The larva of *Pterophorus hieracii* feeds on *Teucrium scorodonia* according to N. Greening, Ent. M. Mag. iv. p. 16. Further notes on this larva by Greening, *l. c.* p. 39.

Life-histories of *Pterophorus lithodactylus* and *osteodactylus* are given by Gregson, Entomologist, iii. p. 201.

Pterophorus isodactylus. Habits noticed by Jordan, Ent. M. Mag. iv. p. 38. Birchall describes its mode of occurrence in Ireland, *l. c.* p. 39.

Alucita hexadactyla. A. Gartner (Verh. nat. Ver. Brünn, v. pp. 44–47) describes the habits and transformations of this species.

New species:—

Pterophorus (*Platyptilus*) *exaltatus*, Zeller, Stett. ent. Zeit. 1867, p. 411, Darjeeling; *P.* (*Œdematophorus*?) *forcipatus*, Zell. *l. c.* p. 412, pl. 2. fig. 7, Darjeeling.

Platyptilus farfarellus, Zeller, Stett. ent. Zeit. 1867, p. 334, note, Meseritz.

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DIPTERA.

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MIK, JOSEF. Dipterologische Beiträge zur "Fauna Austriaca." Verhandl. zool.-bot. Gesellsch. in Wien, Band. xvii. pp. 413–424, pl. 10.

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Verhandl. zool.-bot. Gesellsch. in Wien, Band xvii. pp. 303–314. (See 'Record,' 1866, p. 498.)

Schiner, J. K. Ueber die richtige Stellung von *Ochthiphila litorella*, Fall., im neuen Dipteren-Systeme. Ibid. pp. 325–328.

——. Neue oder weniger bekannte Asiliden des k. zoologischen Hofcabinetes in Wien. Ein Beitrag zur Kenntniss der Asiliden. Ibid. pp. 355–412.

——. Das neue Dipteren-System, meine Ansichten über das Flügelgeäder der Dipteren und der Catalogus systematicus Dipterorum Europæ. Ibid. pp. 631–638.

Stein, J. P. E. F. Eine der Gerste schädliche Fliege. Berliner entom. Zeitschrift, 1867, pp. 395–397, pl. 3.

(*Aphaniptera.*)

Guyon, —. Histoire naturelle et médicale de la Chique (*Rhynchoprion penetrans*, Oken), insecte parasite des régions tropicales des deux Amériques. (Suite.) Revue et Mag. de Zool. 1867, pp. 7–15, 208–211, 276–290, & 324–327, pls. 1 & 2.

This elaborate memoir on the Chigoe is not yet completed. The author seems to aim at bringing together every accessible reference to the insect. The 2 plates are copied from Karsten's figures.

Anatomical and Physiological Papers.

Carus, C. G. Professor Nicolai Wagner's in Kasan Entdeckung von Insekten-Larven die sich fortpflanzen. Nova Acta Acad. Leopoldinæ Nat.-Cur. tom. xxxiii. pp. 95–97.

An abstract of Wagner's observations.

Landois, Léonard. Anatomie des Hundeflohes (*Pulex canis*, Dugès) mit Berücksichtigung verwandter Arten und Geschlechter. Nova Acta Acad. Nat. Cur. tom. xxxiii. pp. 66, pls. 7 : 1866.

An elaborate anatomy of *Pulex canis*, with considerations upon the position of the Fleas in the classification.

Mäklin, F. W. Om vivipara Dipter-larver. [On viviparous dipterous larvæ.] Œfvers. af Finska Vet.-Soc. Förhandl. viii. pp. 22–32.

An abstract of the published observations on the subject.

Meinert, E. Nouvelles observations sur la multiplication des Cécidomyies. Transl. in Ann. Sci. Nat. 5e sér. tome vi. pp. 16–18.

Landois (Zeitschr. für wiss. Zool. xvii. pp. 134–152) describes the sound-producing organs in the members of this order. He

distinguishes three different tones as emitted by these insects—during flight a relatively low tone, a higher one when the wings are held so as to prevent their vibrating, and a higher still when the fly is held so that all motion of the external parts is prevented. The last mentioned is the true voice of the insect; it is produced by the stigmata of the thorax, and may be heard when every other part of the body is cut away. The first sound is caused by the rapid vibration of the wings in the air; the second is caused, or at all events accompanied, by the vibration and friction of the abdominal segments, and by a violent movement of the head against the anterior wall of the thorax. The arrangement of the parts by which the stigmata are enabled to give origin to the sound produced by them is rather complicated; it is described and figured by Landois in *Calliphora vomitoria* (*l. c.* p. 138, pl. 10. figs. 9–12), *Eristalis tenax* (*l. c.* p. 142, pl. 10. fig. 14, and pl. 11. fig. 13), *Scatophaga stercoraria* (*l. c.* p. 145), and *Musca domestica* (*l. c.* p. 145, pl. 11. figs. 15, 16). The author describes the structure of the halteres, which are connected by a lever with the chitinous ring connected with the sound-apparatus in the hinder pair of thoracic stigmata, and, by communicating to this their movements, assist in producing the sound. The vibration of the head in the Diptera during the emission of sound is regarded by the author as due to the transmission of movement from the thorax.

Schiner (Verh. zool.-bot. Ges. in Wien, xvii. pp. 631–638) discusses the remarks made by Gerstäcker, in his Report on the entomological literature for 1863 & 1864, upon the new nomenclature of the wing-veins in the Diptera, proposed by Schiner, the new classification of Diptera established by the joint efforts of Schiner and Brauer, and the catalogue of European Diptera published in 1864. Schiner complains, and in some respects justly, of having been misunderstood by Gerstäcker; but his remarks will hardly admit of being condensed for insertion here.

Brauer also (*l. c.* pp. 737–744) replies to Gerstäcker's remarks, and especially discusses the nature of the metamorphosis in *Cecidomyia destructor* and its allies to which Gerstäcker appealed as invalidating Brauer's primary division of the Diptera into *Cyclorhapha* and *Orthorhapha*, and indicates the differences which he considers distinguish the *Cecidomyiæ* with coarctate pupæ from the true *Cyclorhapha*.

Schiner continues his notices of the Diptera collected on the voyage of the 'Novara' (Verh. zool.-bot. Ges. in Wien, xvii. pp. 303–314). In this report he refers to the species of his families *Stratiomydæ* to *Midasidæ*.

Frauenfeld (Verh. zool.-bot. Ges. in Wien, xvii. pp. 432–433 & 449–456) notices a series of species of this order collected on board the 'Novara.' Some of them are described as new. *Cyrtoneura stabulans* (Meig.) occurred on board on the return voyage, in the midst of the Atlantic, in 20° S. lat.

Drosophila melanogaster (Meig.) was captured at the close of the same voyage, near Gibraltar.

Jaennicke, in the introduction to his descriptions of new Exotic Diptera (Abhandl. Senck. naturf. Ges. vi. p. 312), gives a list of European species which he has met with coming from extra-European countries, and also a note of 5 species of Diptera from Cuba, not recorded in Ramon de la Sagra's Natural History of that island.

C. Gerhardt (Jenaische Zeitschrift, iii. p. 454) records a case in which a patient, after 4 days' illness, vomited about 50 larvæ of some Dipterous insect, probably a large species of Muscidæ.

Cecidomyidæ.

C. G. Carus (Nova Acta &c. Leopoldinæ, xxxiii. pp. 95–97) gives a short account of the larval reproduction of *Miastor*.

Mäklin has published (Œfvers. Finska Vet.-Soc. Förh. viii. pp. 22–32) an abstract of the observations made by various authors upon the viviparous larvæ of *Miastor*.

Lubbock discusses the larval reproduction of *Miastor* in his Presidential Address for 1867. Proc. Ent. Soc. 1866, pp. lvii–lx.

Walsh (Proc. Ent. Soc. Phil. vi. pp. 223–229) notices the galls formed by various species of this family on willows in North America. He also discusses the statements of Fitch and Harris as to the metamorphosis of these gall-gnats.

A. Forel (Bull. Soc. Vaud. Sci. Nat. ix. pp. 82–84) notices the habits of *Cecidomyia brassicæ* (Winn.), and of its parasites (see pp. 205–206).

Asphondylia pruniperda, sp. n., Rondani, Ann. Soc. Nat. Mod. ii. p. 37, in the flower-buds of the common plum; *A. verbasci*, sp. n. (Vall.), Rond. *l. c.* p. 38, in the unopened flowers of *Scrophularia canina*. The Chalcidian parasites of these species are also described by Rondani.

Cecidomyia s. strobiliscus, sp. n., Walsh, Proc. Ent. Soc. Phil. vi. p. 223; *C. s. rhodoides*, sp. n., Walsh, *l. c.* p. 224; *C. s. cornu*, Walsh, ibid.; *C. s. siliqua*, sp. n., Walsh, *l. c.* p. 225. All in galls of willows.

Hormomyia fischeri, sp. n., Frauenfeld, *l. c.* p. 781, larva in *Carex pilosa*.

Culicidæ.

Goureau (Insectes nuisibles, pp. 133–139) describes the characters and habits of various species of this family, which render themselves obnoxious by their avidity for blood, such as *Culex pipiens, ornatus, annulatus, nemorosus*, and *Anopheles maculipennis*.

Culex conopas, sp. n., Frauenfeld, Verh. zool.-bot. Ges. in Wien, xvii. p. 451, on board the 'Novara' in the Chinese Seas.

Mycetophilidæ.

Nowicki has published (Verh. zool.-bot. Gesellsch. in Wien, xvii. Sitzungsb. pp. 23–36) an elaborate report on the *Army-worm*, the assemblage of larvæ of *Sciara thomæ*, as observed by him in the Carpathians and Tatra. He describes the appearance of the peculiar train of larvæ, but did not himself see any of the very large processions described by authors, the longest being only 20 inches in length. The larvæ creep along not only side by side, but also one over the other, all adhering together by their sticky surface, but

continually changing their position in the mass. At the close of their march, when fatigue or the want of nourishment causes the larvæ to rest for a time, the larvæ composing a train collect into a ball, which gradually diminishes in size and finally disappears, by the burrowing into the mould of the larvæ which are lowest in the mass. Nowicki describes the observations made by previous naturalists on these larvæ and the fly from which they originate, and finally indicates the superstitious notions to which they have given rise.

E. D. Cope communicates (Proc. Acad. Nat. Sci. Phil. 1867, pp. 222–226) some particulars as to the occurrence in Pennsylvania of snake-like bodies of larvæ, probably belonging to some fly of the genus *Sciara*, and analogous to those known as the "Heerwurm" in Germany.

Bibionidæ.

Bibio elegans, sp. n., Jaennicke, Abh. Senck. Ges. vi. p. 317, Australia; *B. castanipes*, sp. n., Jaen. ibid., Illinois.

Plecia minor, sp. n., Jaennicke, *l. c.* p. 318, Brazil.

Tipulidæ.

Anisomera. H. Loew (Zeitschr. ges. Naturw. xxvi. pp. 395–426) subjects the species which have been referred to this genus to a critical revision. The earliest species was described by Latreille under the name of *Hexatoma*, which was suppressed by Meigen on account of his own genus of the same name. Loew considers that it is not now desirable to restore Latreille's name to this genus, Meigen's *Hexatoma* (Tabanidæ) being generally received. Meigen established the genera *Nematocera* and *Anisomera*, which he subsequently united under the latter name. The species referred to this genus have got into much confusion as to their synonymy; they are all discussed by Loew, who admits the following species, which are characterized as well as the genus :—

1 & 2. *A. longipes* and *æqualis*, spp. nn. (*vide infrà*). 3. *A. bicolor* (Meig. I.) = *gaedii* (Meig., Schin.). 4. *A. obscura* (Meig.). 5 & 6. *A. saxonum* and *burmeisteri*, spp. nn. (*vide infrà*). 7. *A. vittata* (Meig.). 8. *A. nubeculosa* (Burm.) = *striata* (Schin.).

Tipula striata (Fab.) and *Hexatoma nigra* (Latr.) are not identifiable.

Peronecera fuscipennis (Curt.), characterized by Loew (*l. c.* pp. 422–424), which has been regarded as synonymous with *A. nigra* by Walker, is generically distinct.

Mik changes the name of his *Geranomyia maculipennis* to *G. caloptera*, as *Aporosa maculipennis* (Macq.) is a *Geranomyia*. Verh. zool.-bot. Ges. in Wien, xvii. p. 423.

Chironomus stercorarius (De G.). On the occurrence of this species in in abundance in a cornfield, see Künstler, Verh. zool.-bot. Ges. in Wien, xvii. p. 835.

New genera and species :—

Furina, g. n., Jaennicke, Abh. Senck. Ges. vi. p. 318. Allied to *Limnobia*;

antennæ 11-jointed, joint 2 minute, 3–11 ovate; legs long and stout; wings with 7 longitudinal veins, 2 forked, lower branch united to 3 by a transver vein; 3 veins from discoidal cell. Sp. *L. rufithorax* (Wied.), pl. 43. fig. 1[a].

Macrothorax, g. n., Jaennicke, *l. c.* p. 319. Allied to *Megistocera*; thorax very large, nearly as long as abdomen, with a strong tubercle in front; wings nearly three times as long as abdomen. Sp. *M. ornatus*, sp. n., Jaen. *l. c.* p. 320, pl. 43. fig. 2, Australia.

Cladolipes, g. n., H. Loew, Zeitschr. ges. Naturw. xxvi. p. 424. Allied to *Anisomera*; flagellum (in ♀) of 6 cylindrical joints with small radiating hairs; second longitudinal vein simple. Sp. *C. simplex*, sp. n., Loew, *l. c.* p. 425, Greece.

Rhicnoptila, g. n., Nowicki, Verh. zool.-bot. Ges. in Wien, xvii. p. 337. Allied to *Dactylolabis*; wings long, narrow, useless for flight. Sp. *R. wodzickii*, sp. n., Nowicki, *l. c.* p. 339, pl. 11. fig. 1, in the Tatra, elevation 6000–8000 feet. The larva lives in a gelatinous covering of the granite rocks.

Tipula trifasciata, Loew, Zeitschr. ges. Naturw. xxvi. p. 135, near Bad Liebenstein.—*Tipula niligena*, Jaennicke, *l. c.* p. 320, and *T. abyssinica*, Jaen. *l. c.* p. 321, Simen.

Gynoplistia fusca, Jaennicke, *l. c.* p. 322, Chili.

Anisomera longipes, Loew, *l. c.* p. 415, Alps; *A. æqualis*, Loew, *l. c.* p. 416, Lombardy (= *A. nigra*, Walk.); *A. saxonum*, Loew, *l. c.* p. 417, Germany (= *bicolor*, Burm., Meig. vi. ?, Schin. ?); and *A. burmeisteri*, Loew, *l. c.* p. 419, Germany (= *nigra*, Burm. = *vittata*, Walk.).

Stratiomyidæ.

According to Jaennicke (Abh. Senck. Gesellsch. vi. p. 326) *Sargus vespertilio* (Wied.) belongs to *Chrysochlora*, and *S. inermis* (Wied.) to *Raphiocera*.

Stratiomys strigata. The transformations of this species are briefly noticed by Kawall (Stett. ent. Zeit. 1867, p. 124). The larva was found among black ants in an old fallen *Pinus sylvestris*.

New genera and species :—

Elasma, g. n., Jaennicke, Abh. Senck. Gesellsch. vi. p. 322. Allied to *Phyllophora*; antennæ longer than head, porrect, joint 1 rather long, nearly cylindrical, 2 cup-shaped; 3 long, 5-ringed; 5 terminating in a long point, somewhat dilated at base. Sp. *E. acanthinoidea*, sp. n., Jaen. *l. c.* p. 323, pl. 43. fig. 3, Java.

Rondania, g. n., Jaennicke, *l. c.* p. 324. Allied to *Clitellaria*; discoidal cell emitting only 3 veins. Sp. *Cl. chalybæa* (Wied.); *R. obscura*, sp. n., Jaen. *l. c.* p. 325, pl. 43. fig. 4, Mexico.

Eurynema, g. n., Schiner, Verh. zool.-bot. Ges. in Wien, xvii. p. 308. Allied to *Clitellaria* and *Odontomyia*; antennæ inserted close to margin of mouth, terminal style almost rudimentary; abdomen very flat. Type *Stratiomys fascipennis* (Fab.).

Histiodroma, g. n., Schiner, *l. c.* p. 308. Allied to *Rhaphiocera*; antennæ 3-jointed, joint 3 short, oval, triannular, seta apical, 2-jointed; scutellum unarmed; mediastinal and subcostal veins nearly amalgamated, radial reaching nearly to apex, cubital shortly forked, discoidal cell small, emitting 3 veins. Type *Sargus inermis* (Wied.).

Odontomyia kirchneri, Jaennicke, *l. c.* p. 323, Australia; *O. prasina*, Jaen. *l. c.* p. 324, Mexico.

Sargus festivus, Jaennicke, *l. c.* p. 325, Abyssinia; *S. violaceus*, Jaen. *l. c.* p. 326, Brazil.

Nemotelus lomnickii, Mik, Verh. zool.-bot. Ges. in Wien, xvii. p. 413, pl. 10. fig. 6, Halicia.

Xylophagidæ.

Beris servillei (Macq.) belongs to the genus *Actina*, and the genera *Acanthometra* and *Raphiorhynchus* (Wied.) belong to the present family rather than the Tabanidæ, according to Jaennicke, Abh. Senck. Gesellsch. vi. p. 326.

Subula marginata (Macq.). The habits of this species are described by Goureau; the larva lives under the old bark of dead poplars. Bull. Soc. Ent. Fr. 1867, p. lxxxvii.

Exaireta, g. n., Schiner, *l. c.* p. 309. Allied to *Diphysa*; forehead narrow; antennæ inserted in the middle, 3-jointed, joint 3 elongate, 10-ringed, without style or seta; scutellum with 4 long, strong spines; mediastinal and subcostal veins separated only at base, cubital forked, terminating in anterior margin; discoidal cell large, heptagonal, emitting 4 veins. Type *Xylophagus spiniger* (Wied.).

Tabanidæ.

Goureau (Insectes nuisibles, pp. 140–148) describes the characters and habits of the following species of this family:—*Tabanus bovinus, morio, fulvus, luridus, tropicus, autumnalis, bromius*, 4-*notatus*, and *rusticus*, *Hæmatopota pluvialis*, *Chrysops cæcutiens* and *marmoratus*.

New genera and species:—

Stibasoma, g. n., Schiner, Verh. zool.-bot. Ges. in Wien, xvii. p. 310. Allied to *Selasoma* and *Hadrus*; antennæ inserted below middle of head, joints 1 & 2 short, 2 with a sharp point above, 3 furcate, 5-ringed, ring 1 large, deeply emarginate above, and with a long, thick, blunt process. Type *Tabanus theotœnia* (Wied.).

Apocampta, g. n., Schiner, *l. c.* p. 310. Allied to *Pangonia*; joint 3 of antennæ 8-ringed, without a basal process; abdomen short, depressed; wings short, rounded at apex. Type *A. nigra*, sp. n., Sydney.

Diclisa, g. n., Schiner, *l. c.* p. 311. (*Pangoninæ.*) Allied to *Mycteromyia* (Phil.) = subdivision *Scione* (Walk.); proboscis half as long as body; upper branch of cubital fork with a small appendicular vein, 1st and 4th posterior marginal cells closed, 3rd apical vein abbreviated. Type *Pangonia incompleta* (Macq.).

Pangonia. Jaennicke (Abh. Senck. Gesellsch. vi.) describes the following new species of this genus:—*P. jucunda*, p. 327, Chili; *P. aurofasciata*, ibid., pl. 43, fig. 5, and *P. dilatata*, p. 328, Australia; *P. rüppellii*, p. 329, Simen; *P. crocata*, p. 330, and *P. grisea*, p. 331, Chili.

Tabanus sufis, Jaennicke, *l. c.* p. 332, Nubia; *T. psusennis*, Jaen. *l. c.* p. 333. Abyssinia.

Chrysops lineatus, Jaennicke, *l. c.* p. 334, Illinois.

Nemestrinidæ.

Prosæca, g. n., Schiner, Verh. zool.-bot. Ges. in Wien, xvii. p. 311. Allied

to *Trichophthalma*; eyes naked; epistome never gibbously inflated; wings not reticulated at apex. Type *Nemestrina westermanni* (Wied.).

Hirmoneura nemestrinoides, sp. n., Jaennicke, Abh. Senck. Gesellsch. vi. p. 335, pl. 43. fig. 6, Chili; *H. heydenii*, sp. n., Jaen. *l. c.* p. 336, pl. 43. fig. 7, Australia.

Bombyliidæ.

Jaennicke discusses the European species of this family (Berl. ent. Zeitschr. 1867, pp. 65–76), of which he also describes some new species. In some introductory remarks (*l. c.* pp. 63–64) he refers to the peculiar scales which occur in place of hairs upon some Bombyliidæ, and especially describes the different forms of these appendages to be met with in *Exoprosopa stupida* (Rossi). *Phthiria minuta* (Fab.) is recorded as new to Germany. The following synonymic indications may be cited:—*Anthrax paniscus* (Rossi) = var. *hottentotta* (Linn.); *L. belzebul* and *sabæa* (Fab.) are probably identical. The notices of other known species chiefly relate to their geographical distribution and comparative abundance or rarity.

New genera:—

Ostentator, g. n., Jaennicke, Abh. Senck. Gesellsch. vi. p. 348. Allied to *Bombylius*; joint 3 of antennæ elongate, subulate, with a short apical style; wings long and narrow, third longitudinal vein forked, anterior basal cell nearly twice as long as posterior. Sp. *O. punctipennis*, sp. n., Jaen. *l. c.* p. 349, pl. 43. fig. 10, Chili.

Pœcilognathus, g. n., Jaennicke, *l. c.* p. 350. Allied to *Thlipsomyza*; palpi long; proboscis as long as the body; face below produced into a snout. Sp. *P. thlipsomyzoides*, sp. n., Jaen. *l. c.* p. 351, pl. 43. fig. 11, Mexico.

Diplocampta, g. n., Schiner, Verh. zool.-bot. Ges. in Wien, xvii. p. 312. Allied to *Exoprosopa*; antennæ distant, very short, joint 3 round, with a short style; arolia rudimentary; mediastinal and subcostal veins of nearly equal length, radial apparently springing from cubital perpendicularly, and then bent at a right angle, with a recurrent appendage. Type *D. singularis*, sp. n., Chili.

Tritoneura, g. n., Schiner, *l. c.* p. 312. Allied to *Comptosia*; proboscis longer than head and thorax, gaping like a fork; antennæ prominent, joint 1 long, 2 short, 3 = 1 & 2 together, subapical style rudimentary; wings with 4 cubital cells. Type *Comptosia lugubris* (Phil.).

Callynthrophora, g. n., Schiner, *l. c.* p. 313. Allied to *Corsomyza*; antennæ longish, approximate at base, joint 1 short, 2 very small, 3 longer than 1 & 2 together, clavate, apical style rudimentary; wings with 3 cubital cells. Type *C. capensis*, sp. n.

New species:—

Argyromœba massanensis, Jaennicke, Abh. Senck. Gesellsch. vi. p. 336, Massana.

Anthrax nilotieus, Jaennicke, *l. c.* p. 337, Abyssinia; *A. bipartitus*, Jaen. *l. c.* p. 38, Chili; *A. castanea*, Jaen. ibid., pl. 44. fig. 15 (wing), and *A. paradoxa*, Jaen. *l. c.* p. 339, pl. 44. fig. 16 (wing), Mexico.

Anthrax dolosa, Jaennicke, Berl. ent. Zeitschr. 1867, p. 65, south of France, Spain; *A. stœchades*, Jaen. *l. c.* p. 66, Hyères; *A. squamifera*, Jaen. *l. c.* p. 67, South Europe; *A. variegata*, Jaen. *l. c.* p. 69, Sicily.

Anthrax claripennis, Kowarz, Verh. zool.-bot. Ges. in Wien, xvii. p. 324, Miskolcz and Losonez.

Exoprosopa. Of this genus Jaennicke (Abh. Senck. Gesellsch. vi.) describes the following new species:—*E. kaupii*, p. 340, pl. 44. fig. 17 (wing, with 5 submarginal cells), *E. anthracoidea*, ibid., pl. 44. fig. 18 (wing), *E. rostrifera*, p. 341, pl. 44. fig. 19 (wing), *E. blanchardiana*, ibid., pl. 44. fig. 20 (wing), and *E. pueblensis*, p. 342, pl. 44. fig. 21 (wing), from Mexico; *E. busiris*, p. 343, Simen; *E. chrysolampis*, p. 344, pl. 43. fig. 8, Java, Moluccas; and *E. leuconoe*, p. 345, Moluccas.

Comptosia rufoscutellata, Jaennicke, *l. c.* p. 345, pl. 43. fig. 9, Australia.

Adelidea flava, Jaennicke, *l. c.* p. 346, Mexico.

Bombylius loewii, Jaennicke, *l. c.* p. 346, Australia; *B. neithokris*, Jaen. *l. c.* p. 347, Abyssinia.

Bombylius senilis, Jaennicke, Berl. ent. Zeits. 1867, p. 74, Switzerland.

Systœchus pausarius, Jaennicke, Abh. Senck. Gesellsch. vi. p. 348, Australia.

Cillenia unicolor, Jaennicke, *l. c.* p. 350, Chili.

Chalcochiton schineri, Nowicki, Verh. zool.-bot. Ges. in Wien, xvii. p. 343, Podolia (=*Mulio holosericeus*, Wied., changed on account of *Anthrax holosericeus*, Fab.).

Lomatia rogenhoferi, Nowicki, *l. c.* p. 346 (=*L. belzebul*, Schin. nec Fab.), Podolia.

Phthiria zimmermanni, Nowicki, *l. c.* p. 347, Podolia.

Sparnopolius cumatilis and *S. coloradensis*, Grote, Proc. Ent. Soc. Phil. vi. p. 445, Colorado Territory.

Acroceridæ.

Jaennicke (Berl. ent. Zeitschr. 1867, p. 77) notices the European species of this group. *Ogcodes pallipes* (Lat.) is recorded as occurring in Germany.

Lasia cyaniventris, sp. n., Jaennicke, Abh. Senck. Gesellsch. vi. p. 351, Chili.

Scenopinidæ.

Jaennicke (Berl. ent. Zeitschr. 1867, p. 78) remarks upon the distribution of the European species of this family.

Asilidæ.

Schiner (Verh. zool.-bot. Ges. in Wien, xvii. pp. 355–412) publishes notes, chiefly from type specimens, on the following known species of this family:—Dasypogoninæ: *Leptogaster niger* (Wied.); *L. nitidus* (Macq.); *L. histrio* (Wied.)=*annulatus* (Say); *L. glabratus* (Wied.); *L.* (*Gonypes*) *audouini* (Macq.); *L.* (*Gonypes*) *molucanus* (Dolesch.); *Gonioscelis* (*Dasyp.*) *setosus* (Wied.); *Triclis* (*Dasyp.*) *palasii* (Wied.); *T.* (*Asilus*) *hæmorrhoidalis* (Fab.); *Dioctria octopunctata* (Say); *Laparus* (*Dasyp.*) *albopunctatus* (Macq.)=*D. spinther* (Walk.); *Lochites* (*Dasyp.*) *ornatus* (Wied.), varieties noticed; *Aphamartania* (*Dasyp.*) *polita* (Say); *Lastaurus* (*Dasyp.*) *lugubris* (Macq.)= *L. anthracinus* (Loew), perhaps only a var. of *L. fallax* (Macq.); *L.* (*D.*) *fallax* (Macq.)=*L. mutabilis* (Loew), of which *D.* (*Morimna*) *mallophoroides* (Walk.) is probably a var.; *Plesiomma* (*Dasyp.*) *lineata* (Fab.)=*P. macra* (Loew); *Microstylum* (*Asil.*) *capensis* (Fab.); *M.* (*Dasyp.*) *afrum* (Wied.); *M.* (*D.*) *tæniatum* (Wied.); *M.* (*D.*) *lugubre* (Wied.); *Archilestes*

(*D.*) *capnopterus* (Wied.)=*D. albitarsis* (Macq.). LAPHRINÆ: *Atomosia* (*Laphria*) *viduata* (Wied.); *Laphria rufipennis* (Wied.); *Maira* (*L.*) *spectabilis* (Guér.)=*splendida* (Guér.)=*kollari* (Dolesch.)=*socia, replens, comes,* and *consobrina* (Walk.); *M.* (*L.*) *tristis* (Dolesch.)=*L. taphius* (Walk.); *M.* (*L.*) *villipes* (Dolesch.); *M.* (*L.*) *pellucida* (Dolesch.); *Andrenosoma* (*L.*) *erythrogastra* (Wied.). ASILINÆ: *Craspedia* (*L.*) *splendidissima* (Wied.)=*C. audouini* (Macq.)=*Blepharotes abdominalis* (Westw.); *Mallophora* (*Asil.*) *calida* (Fab.); *M. geniculata* (Macq.); *M. opposita* (Walk.); *M.* (*A.*) *ruficauda* (Wied.); *M.* (*Dasyp.*) *nigritarsis* (Fab.), of which *M. nigrifemorata* (Macq.) is probably ♀; *M. heteroptera* (Macq.) probably=*A. laphroides* (Wied.), of which *M. clausicella* (Macq.) is perhaps a var.; *M. singularis* (Macq.); *Promachus* (*Asil.*) *trichonotus* (Wied.); *P.* (*A.*) *nigripes* (Fab.); *P.* (*A.*) *vagator* (Wied.); *P.* (*A.*) *vertebratus* (Say); *Philodicus* (*Trupanea*) *rubritarsatus* (Macq.); *Alcimus* (*Asil.*) *fraternus* (Wied.); *A.* (*A.*) *sericans* (Wied.); *Proctophorus* (*A.*) *pyrrhomystax* (Wied.); *Erax* (*Dasyp.*) *striola* (Fab.); *E. maculatus* (Macq.); *E.* (*A.*) *rufinus* (Wied.); *E.* (*A.*) *mellinus* (Wied.); *E.* (*A.*) *copulatus* (Wied.); *E.* (*A.*) *lascivus* (Wied.); *E.* (*A.*) *lades* (Walk.); *E. cinerascens* (Bell.); *E. albibarbis* (Macq.); *E. bastardi* (Macq.); *Proctacanthus* (*Asil.*) *leucopogon* (Wied.); *P.* (*A.*) *longus* (Wied.); *P.* (*A.*) *heros* (Wied.); *Eccritosia* (*A.*) *plinthopyga* (Wied.); *Asilus pelago* (Walk.); *Lophonotus* (*A.*) *chalcogaster* (Wied.); *L. auribarbis* (Macq.); *L.* (*A.*) *pellitus* (Wied.); *L.* (*A.*) *molitor* (Wied.); *L.* (*A.*) *comatus* (Wied.); *Synolcus* (*A.*) *acrobaptus* (Wied.)=*S. signatus* (Loew); *Itamus* (*A.*) *alcetas* (Walk.); *Ommatius minimus* (Dolesch.); *O. noctifer* (Walk.) = *minor* (Dolesch.); *O. angustiventris* (Macq.) probably=*O. cæræbus* (Walk.); *Allocotosia* (*Omm.*) *scitula* (Walk.); and *Atractia* (*Asil.*) *psilogaster* (Wied.). Of a great number of these species Schiner gives detailed and corrected descriptions.

JAENNICKE (Berl. ent. Zeitschr. 1867, pp. 81–94) remarks upon the European species of this family, chiefly with regard to their geographical distribution and comparative abundance or rarity. Some new species are described by him, and the following synonymic indications may be cited:—*Dioctria baumhaueri* (Meig.)=*flavipes* (Meig.); *Lasiopogon macquarti* (Schin.) is distinct from the species so named by Perris; *Laphria ignea* (Meig.) appears to be a var. of *gilva* (Linn.); *L. dioctriæformis* (Meig.) is probably a var. of *marginata* (Linn.).

JAENNICKE substitutes *Holcocephala* for *Discocephala* (Macq.), the latter name being preoccupied in Hemiptera. He also notices that *Plesiomma nigra* (Macq.)=*Dasypogon fuliginosus* (Wied.). Abh. Senck. Gesellsch. vi. p. 359.

Asilus impendens (Wied.) belongs to *Senoprosopis* (Macq.), and *A. ludens* (Wied.) to *Trupanea* (Macq.), *l. c.* p. 366.

V. MAYET has observed the parasitism of the larva of *Asilus barbarus* upon that of *Phyllognathus silenus*. Bull. Soc. Ent. Fr. 1866, p. lxiv.

New genera:—

Nicocles, g. n., Jaennicke, Abh. Senck. Gesellsch. vi. p. 355. Allied to *Plesiomma*; forehead broad; abdomen flat, base narrow, apex globular, flask-shaped. Sp. *N. analis*, sp. n., Jaen. *l. c.* p. 355, pl. 43. fig. 13, Mexico.

Psecas, g. n., Jaennicke, *l. c.* p. 359. Allied to *Craspedia*; middle tibiæ di-

lated and thickened at apex, especially within, and covered beneath with strong, blunt spines; joint 1 of middle tarsi dilated. Sp. *P. fasciata*, sp. n., Jaen. *l. c.* p. 360, pl. 44. fig. 2 (leg), Australia.

Doryclus, g. n., Jaennicke, *l. c.* p. 366. Allied to *Asilus*; posterior legs elongated, tibiæ dilated and hairy at apex, as also joints 1 & 2 of tarsus, 2 one-fourth length of 1 (remainder wanting). Sp. *A. distendens* (Wied.), pl. 44. fig. 3.

Eupalamus, g. n., Jaennicke, Berl. ent. Zeits. 1867, p. 86, pl. 1. (1866) figs. 1 & 2. Allied to *Cyrtopogon*; joint 3 of antennæ somewhat shorter than 1 & 2 together, style but little shorter than joint 3; moustache in ♂ projecting in a tuft and longer than antennæ. Sp. *E. alpestris*, sp. n., Jaen. *l. c.* p. 86, Switzerland.

Polysarca, g. n., Schiner, *l. c.* p. 398. Allied to *Proctacanthus*; abdomen short, thick, cylindrical. Sp. *P. violacea*, sp. n., Schin. *l. c.* p. 399, Elisabethopol.

New species:—

Leptogaster ramoni, Jaennicke, Abh. Senck. Gesellsch. vi. p. 354, Cuba.

Leptogaster pusillus, Jaennicke, Berl. ent. Zeits. 1867, p. 81, Germany.

Leptogaster distinctus, Schiner, *l. c.* p. 357, Brazil; *L. vitripennis*, Schiner, *l. c.* p. 358, Brazil; *L. kamerlacheri*, Schiner, ibid., Brazil; and *L. ochraceus*, Schin. *l. c.* p. 359, Pennsylvania.

Euscelidia fascipennis, Schiner, *l. c.* p. 359, Brazil.

Holopogon albosetosus, Schiner, *l. c.* p. 360, Amasia; *H. philadelphicus*, Schiner, ibid., Pennsylvania.

Holopogon flavescens, Jaennicke, *l. c.* p. 84, Marseilles.

Lasiopogon bellardii, Jaennicke, *l. c.* p. 85, Switzerland.

Dioctria lugubris, Jaennicke, Abh. Senck. Ges. vi. p. 356, Cuba.

Dasipogon [sic] *heydenii*, Jaennicke, *l. c.* p. 356, pl. 44. fig. 1, Corrientes.

Stenopogon macquartii, Jaennicke, *l. c.* p. 358, Abyssinia.

Stenopogon antar, Schiner, *l. c.* p. 361, Brussa.

Dioctria meyeri, Nowicki, Verh. zool.-bot. Ges. in Wien, xvii. p. 348, Podolia.

Gonioscelis phacopterus, Schiner, *l. c.* p. 362, *G. hæmorrhous*, Schiner, ibid., *G. melanocephalus*, Schiner, *l. c.* p. 363, and *G. ventralis*, Schiner, ibid., Africa.

Stichopogon chrysostoma, Schiner, *l. c.* p. 364, Amasia, Egypt.

Damalis felderi, Schiner, *l. c.* p. 365, Ceylon.

Habropogon appendiculatus, Schiner, *l. c.* p. 367, Spalato.

Xiphocerus longicornis, Schiner, *l. c.* p. 367, Sicily; *X. brussensis*, Schiner, *l. c.* p. 368, Brussa.

Lochites claripennis, Schiner, *l. c.* p. 369, Brazil; *L. apicalis*, Schiner, *l. c.* p. 370, Brazil.

Saropogon argyrocinctus, Schiner, *l. c.* p. 370, Brazil.

Saropogon bicolor, Jaennicke, *l. c.* p. 357, Panama.

Senobasis auricincta, Schiner, *l. c.* p. 371, Surinam.

Aphamartania frauenfeldi, Schiner, *l. c.* p. 372, Venezuela; *A. syriaca*, Schiner, ibid., Syria.

Plesiomma longiventris, Schiner, *l. c.* p. 375, Cuba; *P. jungens*, Schiner, ibid., Brazil.

Cacodæmon crabroniformis, Schiner, *l. c.* p. 375, origin not stated.

Aphestia brasiliensis, Schiner, *l. c.* p. 378, and *A. calceata*, Schiner, *l. c.* p. 379, Brazil.

Cerotainia brasiliensis, Schiner, *l. c.* p. 379, and *C. bella*, Schiner, *l. c.* p. 380, Brazil.

Laphria carolinensis, Schiner, *l. c.* p. 380.

Apoxyria apicata, Schiner, *l. c.* p. 382, origin not stated.

Michotamia setitarsata, Schiner, *l. c.* p. 383, origin not stated.

Mallophora belzebul, Schiner, *l. c.* p. 385, Brazil.

Promachus wiedemanni, Schiner, *l. c.* p. 388, South America?; *P. philadelphicus*, Schiner, *l. c.* p. 389, Pennsylvania.

Apoclea illustris, Schiner, *l. c.* p. 391, and *A. aberrans*, Schiner, ibid., Egypt.

Atomosia beckeri, Jaennicke, *l. c.* p. 359, Mexico.

Mallophora nigriventris, Jaennicke, *l. c.* p. 361, Paraguay.

Erax zetterstedtii, Jaennicke, *l. c.* p. 362, Venezuela.

Asilus sundaicus, Jaennicke, *l. c.* p. 363, Java; *A. regius*, Jaen. *l. c.* p. 364, Australia; *A. agrion*, Jaen. *l. c.* p. 365, Illinois.

Asilus armatus, Jaennicke, Berl. ent. Zeits. 1867, p. 91, south of Europe.

Protacanthus micans, Schiner, *l. c.* p. 397, North America; *P. variabilis*, Schiner, ibid., and *P. robustus*, Schiner, *l. c.* p. 398, origin not stated.

Lophonotus leoninus, Schiner, *l. c.* p. 402, *L. ursinus*, Schiner, *l. c.* p. 403, and *L. albovittatus*, Schiner, ibid., Cape of Good Hope.

Dysmachus appendiculatus, Schiner, *l. c.* p. 404, Amasia.

Senoprosopis brasiliensis, Schiner, *l. c.* p. 404, and *S. varipes*, Schiner, *l. c.* p. 405, Brazil.

Mochtherus illustris, Schiner, *l. c.* p. 406, Syria; *M. goliath*, Schiner, *l. c.* p. 407, Brussa.

Cerdistus mannii, Schiner, *l. c.* p. 407, Amasia.

Epitriptus syriacus, Schiner, *l. c.* p. 409.

Tolmerus corsicus, Schiner, *l. c.* p. 409, Corsica.

Ommatius holosericeus, Schiner, *l. c.* p. 411, Brazil; *O. erythropus*, Schiner, ibid., South America.

Atractia coronata, Schiner, *l. c.* p. 412, and *A. pulverulenta*, Schiner, ibid., Brazil.

Mydas gracilis, Jaennicke, Abh. Senck. Gesellsch. vi. p. 353, pl. 43. fig. 12, Australia.

Therevidæ.

Jaennicke (Berl. ent. Zeitschr. 1867, pp. 78–81) remarks upon the European species of this family. *Thereva oculata* (Egg.)=*nobilitata* (Fab.). The ♂ of *T. melaleuca* (Loew) is described by Jaennicke (*l. c.* p. 81) from a specimen taken *in copulâ*.

Thereva rondanii, sp. n., Jaennicke, *l. c.* p. 79, Switzerland.

Thereva schineri, sp. n., Jaennicke, Abh. Senck. Gesellsch. vi. p. 352, and *T. maculicornis*, sp. n., Jaen. *l. c.* p. 353, Chili.

Leptidæ.

Frauenfeld (Verh. zool.-bot. Ges. in Wien, xvii. pp. 493–497) remarks upon the genera of the Leptidæ, and especially upon the genus *Ptiolina* (Zett.), which he shows to be distinct

from that so named by Walker, Haliday, and Schiner, the anal cell being closed in the former and open in the latter. He therefore proposes a new name for *Ptiolina* of recent authors, and gives the following table of the characters of this and the allied genera:—

I. Joint 3 of antennæ round, oval, or conical; seta terminal.
  a. Anal cell open..... LEPTIS. (Type *L. scolopacea*, Linn.)
  b. Anal cell closed.
    α. Seta hair-like..... CHRYSOPILA. (Type *C. atrata*, Fab.)
    β. Seta styliform..... PTIOLINA. (Type *P. obscura*, Fall.)

II. Joint 3 of antennæ reniform; seta apparently dorsal.
  a. Anal cell closed..... ATHERIX. (Type *A. ibis*, Fab.)
  b. Anal cell open..... SYMPHOROMYIA. (=*Ptiolina*, auctt.; type *Atherix melæna*, Meig.)

JAENNICKE (Berl. ent. Zeitschr. 1867, pp. 95–100) discusses the geographical range, variation, and synonymy of the European species of this family. He regards *Leptis strigosa* (Meig.) as a var. ♀ *L. scolopacea* (Linn.).

Eurytion, g. n., Jaennicke, *l. c.* p. 99, pl. 1. (1866) fig. 8. Allied to *Chrysopila*; joint 1 of antennæ short, broader than long, 2 shorter than 1, 3 longer than 1+2, pyriform, seta terminal, short and thick. Sp. *E. paradoxus*, sp. n., Jaen. *l. c.* p. 99, Switzerland.

Leptis janotæ, sp. n., Nowicki, Verh. zool.-bot. Ges. in Wien, xvii. p. 349, Galicia.

Ptiolina wodzizkii, sp. n., Frauenfeld, *l. c.* p. 497, pl. 12. figs. 15–20, Galicia.

EMPIDÆ.

Empis. In a series of three papers in the Berliner ent. Zeitschr. for 1867, H. Loew subjects the species belonging to certain sections of this genus to a critical revision. The first of these (*l. c.* pp. 1–10) relates to the species related to *Empis ciliata* (Fab.), to which Loew refers *E. nigerrima* and *E. hirta* (Loew) of known species, and 3 new species here described by him. A 4th new species (*E. pilosa*) is also characterized as being nearly allied to the preceding in its general characters, although its halteres are yellow. The second section discussed by Loew (*l. c.* pp. 11–24 and 157–160) is the group of species allied to *E. stercorea* (Linn.), under which he indicates and characterizes 11 European species, of which the following were previously described:—*E. stercorea* (Linn.) incl. *E. stigma* (Meig.), *E. punctata* (Meig.)=*E. ignota* (Meig.), *E. trigramma* (Meig.), *E. lutea* (Meig.), and *E. parvula* (Egg.). *E. punctata* (Fab.) is said by Loew to be distinct from the species originally described by Meigen under that name, and identical with that referred by Zetterstedt to *E. testacea* (Fab.). It is described as new by the author, who also characterizes *E. testacea* (Fab.) from a specimen said to have been determined by Fabricius (*l. c.* p. 158). The author also indicates 2 species (*E. dispar*, Scholtz, and *E. mesogramma*, sp. n.) which in their general characters seem to approach the *E. stercorea* group, but differ in certain points. *E. mesogramma* belongs to the section of *E. nigricans*, to which Loew (*l. c.* p. 24) refers 12 other European species, namely:—*E. variegata* (Meig.), *affinis* (Egg.), *confusa* (Loew), *maculata* (Fab.), *apicalis* (Loew), *rava* (Loew), *macra* (sp. n.), *meridionalis* (Meig.), *nigricans* (Meig.), *cognata* (Egg.), *discolor*

(Loew), and *alpina* (sp. n.). The characters of *E. macra* and *alpina* are imperfectly indicated. The third set of species here treated of by Loew (*l. c.* pp. 25–62 and 160–166) are those belonging to the group of *E. chioptera*, which possess dark halteres; and these he brings together in subordinate groups, so as to facilitate as much as possible their very difficult identification (see p. 164). The total number of species cited by Loew under this category is 28, of which only the following were previously described:—*E. florisomna* (Loew), *E. pusio* (Egg.), and *E. chioptera* and *volucris* (Meig.). But he gives a list (*l. c.* pp. 56–57) of species with dark halteres with which he is not acquainted, but which probably belong to the same group, and some of which are perhaps identical with his supposed new species.

Empis tessellata. Perty (Mitth. naturf. Gesellsch. in Bern, 1867, p. 306) notices an example with the head and proboscis monstrously developed, the former bearing two long, horn-like excrescences.

Empis. The following new species of this genus are described by H. Loew (Berl. ent. Zeits. 1867):—*E. pilicornis*, *l. c.* pp. 3 & 8, Spain; *E. fumosa*, *l. c.* pp. 5 & 8, Hungary?; *E. nigricoma*, *l. c.* pp. 6 & 8, Austria; *E. pilosa*, *l. c.* p. 9, Germany; *E. dimidiata*, *l. c.* pp. 12 & 19, South Germany; *E. univittata*, *l. c.* pp. 12 & 20, Middle and Northern Europe (=*stercorea*, var. *b*, Zett.); *E. æqualis*, *l. c.* pp. 13 & 20, Germany; *E. bilineata*, *l. c.* pp. 14 & 20, Middle and Northern Europe (=*punctata*, Fab. nec Meig., *vide suprà*); *E. semicinerea*, *l. c.* pp. 16 & 21, Germany; *E. nana*, *l. c.* pp. 18 & 21, Styria and Carinthia; *E. mesogramma*, *l. c.* p. 22, Silesia; *E. macra*, *l. c.* p. 24 (char. inc.), Greece; *E. alpina*, ibid. (char. inc.), Switzerland; *E. scaura*, *l. c.* pp. 27 & 52, Switzerland and Carinthia; *E. helophila*, *l. c.* pp. 28 & 52, Western Germany; *E. setosa*, *l. c.* pp. 30 & 52, Chio; *E. cinctinatula*, *l. c.* pp. 31 & 52, Carinthia; *E. caudatula*, *l. c.* pp. 33 & 53, Germany; *E. mœrens*, *l. c.* pp. 34 & 53, Austria; *E. tristis*, *l. c.* pp. 35 & 53, Grecian archipelago; *E. simplicipes*, *l. c.* pp. 37 & 53, Western Germany; *E. æstiva*, *l. c.* pp. 39 & 54, Germany, Denmark; *E. pulicaria*, *l. c.* pp. 41 & 54, Silesia; *E. prodromus*, *l. c.* pp. 42 & 54, Western Germany; *E. sicula*, *l. c.* pp. 45 & 55, Sicily; *E. dasyprocta*, *l. c.* pp. 46 & 55, Germany; *E. hystrix*, *l. c.* pp. 47 & 55, Sicily; *E. serotina*, *l. c.* pp. 49 & 55, Silesia, Posen; *E. præcox*, *l. c.* pp. 50 & 56, Rhodes; *E. strigata*, *l. c.* p. 159, Sarepta.

Rhamphomyia conformis, sp. n., Kowarz, Verh. zool.-bot. Ges. in Wien, xvii. p. 321, Losonez.

Dolichopodidæ.

Mik describes the ♀ of his *Tachytrechus kowarzii*. Verh. zool.-bot. Ges. in Wien, xvii. p. 421.

Porphyrops longilamellatus, sp. n., Kowarz, Verh. zool.-bot. Ges. in Wien, xvii. p. 319 (figs. A, B, genitalia), Mährisch-Schönberg.

Gymnopterus [sic] *comitialis*, sp. n., Kowarz, *l. c.* p. 320, Losonez.

Dolichopus braueri, sp. n., Nowicki, Verh. zool.-bot. Ges. in Wien, xvii. p. 351, in the Tatra.

Phoridæ.

Phora oligoneura, sp. n., Mik, Verh. zool.-bot. Ges. in Wien, xvii. p. 414, pl. 10. figs. 10, 11, Austria.

Phora navigans, sp. n., Frauenfeld, Verh. zool.-bot. Ges. in Wien, xvii. p. 454, pl. 12. fig. 14, on board the 'Novara' between Rio Janeiro and the Cape.

Muscidæ.

Tachinides.

Jaennicke (Abh. Senck. Ges. vi. p. 395) indicates as follows the modern genera to which he refers the following species of this group:—*Sarcophaga phœnicurus* (Wied.) to *Metopia* (Meig.); *Tachina obsidiana* (W.) to *Phyto* (R. D.)?; *T. mutata* (Fab.) to *Rhinophora* (R. D.)?; *T. singularis* (W.) to *Siphona* (Meig.); *T. isis* (W.) to *Fabricia* (Meig.); *T. brina* and *xanthaspis* (W.) to *Masicera* (Macq.); *T. pyrrhocera* and *Musca hauriens* (W.) to *Meigenia* (R. D.); *T. macilenta, pyrrhopyga, notata,* and *socia* (W.) to *Exorista* (Macq.); *T. nitens* (W.) to *Micropalpus* (Macq.); *T. melanopyga* (W.) to *Belvosia* (R. D.); and *T. analis* (Fab.) to *Echinomyia* (Dum.).

Archytas, g. n., Jaennicke, *l. c.* p. 392. Allied to *Echinomyia*; proboscis acicular, ending in a fine point. Sp. *A. bicolor,* sp. n., Jaen. *l. c.* p. 392, pl. 44. fig. 8, Venezuela.

New species:—

Baumhaueria leucocephala, Jaennicke, *l. c.* p. 380, pl. 44. fig. 5, Egypt.

Phorocera sarcophageæformis, Jaennicke, Abh. Senck. Gesellsch. vi. p. 381, and *P. cærulea* [sic], Jaen. *l. c.* p. 382, Simen.

Phorocera vagator, Frauenfeld, *l. c.* p. 455, on the 'Novara,' near Ceylon.

Tachina cubæcola, Jaennicke, *l. c.* p. 382, pl. 44. fig. 6, Cuba.

Exorista fasciata, Jaennicke, *l. c.* p. 383, Java; *E. africana,* Jaen. *l. c.* p. 384, and *E. bigoti,* Jaen. ibid., Simen.

Nemoræa arachnoidea, Jaennicke, *l. c.* p. 385, pl. 44. fig. 7, Simen.

Demoticus ratzeburgii, Jaennicke, *l. c.* p. 386, Chili.

Micropalpus rufipes, Jaennicke, *l. c.* p. 387, Panama; *M. albomaculatus,* Jaen. *l. c.* p. 388, Mexico; *M. pallidus,* Jaen. ibid., Abyssinia; and *M. longirostris,* Jaen. *l. c.* p. 389, Simen.

Echinomyia costæ, Jaennicke, *l. c.* p. 389, Simen.

Jurinea flavifrons, Jaennicke, *l. c.* p. 390, *J. apicalis,* Jaen. ibid., Mexico; and *J. fuscipennis,* Jaen. *l. c.* p. 391, North America.

Dejeania variabilis, Jaennicke, *l. c.* p. 393, pl. 44. fig. 9, and *D. striata,* Jaen. *l. c.* p. 394, Simen; *D. rutilivides,* Jaen. ibid., Mexico.

Anthomyides.

Rondani has published (Atti Soc. Ital. Sci. Nat. ix. pp. 68–217) a complete revision of the Italian species of this subfamily. He distinguishes the following genera:—

I. Eyes in ♂ approximate, forehead always narrower than one eye.
  A. Upper calyptral scale exposing or partially covering the lower one.
    1. Anterior femora in ♂ dentate or excavate at apex.
      α. Eyes naked or nearly so ..... 1. Hydrotæa (R. D.).
      β. Eyes pilose, sometimes tomentose in ♀.
        2. Onodontha (Rond.).
    2. Anterior femora simple in both sexes.
      α. Second longitudinal vein not spinulose above; legs in ♂ of ordinary length.
        * Seventh longitudinal vein not produced to posterior margin.
          a. Posterior tibiæ incurved, especially in ♂.
            3. Ophira (R. D.).

b. Posterior tibiæ not incurved.
a. Arista pilose or pilosulous.
** Proboscis articulate and subacuminate at apex, not dilated into a lip .... 4. Drimeja (Meig.).
†† Proboscis with a distinct lip.
αα. Seventh longitudinal vein rather distant from margin of wing; abdomen not distinctly depressed.
— Intermediate tibiæ setigerous behind and on the outside.
Eyes naked or nearly so.
5. Aspilia, g. n.
Eyes pilose in both sexes.
6. Polietes (Rond.).
= Intermediate tibiæ setigerous behind and at apex.
Eyes more or less pilose.
7. Yetodesia (Rond.).
Eyes naked or nearly so.
8. Spilogaster (Macq.).
ββ. Seventh longitudinal vein less distant from margin; abdomen depressed.
9. Piezura, g. n.
b. Arista naked or pubescent.
** Seventh longitudinal vein not very distant from margin.
αα. Intermediate tibiæ setigerous behind and on the outside; abdomen depressed.
10. Homalomya (Bouché).
ββ. Intermediate tibiæ setuligerous behind; abdomen subcylindrical or subconical.
11. Azelia (R. D.).
†† Seventh longitudinal vein more distant from margin.
αα. Intermediate tibiæ with a few setæ behind, posterior nearly naked.. 12. Melanochelia, g. n.
ββ. Intermediate tibiæ setigerous behind and outside, posterior with many setæ behind.
13. Limnophora (R. D.).
† Seventh longitudinal vein reaching posterior margin of wing, or at least the apex of the spurious vein.
a. Arista more or less pilose .. 14. Hydrophoria (R. D).
b. Arista naked, or puberulous.
a. Eyes distinctly pilose.... 15. Lasiops (Meig.).
b. Eyes naked ..... 16. Anthomyia (Meig.)
β. Second longitudinal vein spinulose above; legs in ♂ elongate.
17. Achantiptera (Rond.).

B. Lower calyptral scale concealed by upper one.
1. Arista naked or puberulous.
α. Proboscis dilated into a lip at apex.
* Cheeks not inflated or setose.. 18. Chorthophila (Macq.).
† Cheeks inflated and setigerous 19. Eriphia (Meig.).

β. Proboscis subacuminate at apex, not labiate.
20. Acyglossa, g. n.
2. Arista more or less pilose ..... 21. Hylemyia (R. D.).
II. Eyes distant in both sexes.
A. Lower calyptral scale concealed by the upper one.
1. Arista nearly naked.
a. Seventh longitudinal vein produced to posterior margin; antennæ inclined..... 22. Chirosia (Rond.).
β. Seventh longitudinal vein abbreviated; antennæ suberect.
23. Schœnomyza (Hal.).
2. Arista distinctly pilose, or plumose.
a. Seventh longitudinal vein not produced to posterior margin.
24. Chelisia (Rond.).
β. Seventh longitudinal vein produced to posterior margin.
25. Mycophaga (Rond.).
B. Lower calyptral scale more or less exposed.
1. Wings shorter than abdomen; abdominal segments with the disk setose ..... 26. Syllegoptera (Rond.).
2. Wings of ordinary length; or abdominal segments not setose on the disk.
a. Lower calyptral scale with its limb barely exposed.
27. Oplogaster (Rond.).
β. Lower calyptral scale longer than upper one.
* Arista nearly naked or puberulous.
a. Penultimate joint of arista rather long; inner transverse vein opposite apex of first longitudinal.
28. Atherigona (Rond.).
b. Penultimate joint of arista not elongate; inner transverse vein opposite or beyond apex of second longitudinal vein.
29. Cænosia (Meig.).
† Arista distinctly pilose.
a. Palpi not spathuliform .... 30. Caricea (R. D.).
b. Palpi spathuliform..... 31. Lispa (Lat.).

Hydrotæa includes 7 Italian species, 1 new, type *dentipes* (Fab.); *Onodontha* (Rond.), type *ciliata* (Fab.), with 3 species, 1 new; *Ophira* with 2 species, type *leucostoma* (Fall.); *Drimeja*, 1 sp., *hamata* (Fall.); *Polietes* (Rond.) = *Macrosoma* (R. D.), 1 sp., *lardaria* (Fab.); *Vetodesia* (Rond.), 27 species, 8 new, type *pallida* (Fab.); *Spilogaster*, 22 species, 9 new, type *pagana* (Fab.); *Homalomya*, 13 species, 8 new, type *canicularis* (Linn.); *Azelia*, 5 species, 2 new, type *triquetra* (Fall.); *Limnophora*, 2 species, type *compuncta* (Wied.); *Hydrophoria*, 5 species, 1 new, type *conica* (Fall.); *Lasiops* (= *Thricops* and *Thricophticus*, Rond.), 1 Italian species, *anthomyinus* (Rond.) = *hirtula* (Rond. nec Zett.); *Anthomyia*, 18 species, 5 new, type *pluvialis* (Linn.); *Achantiptera* (Rond.), 1 species, *inanis* (Fall.); *Chorthophila*, 33 species, 16 new, type *sepia* (Meig.); *Eriphia*, 1 species, *cinerea* (Meig.); *Hylemyia*, 17 species, 7 new, type *strigosa* (Fall.); *Chirosia* (Rond.), 1 species, *albimana* (Wahlb.); *Schœnomyza*, 1 species, *litorella* (Fall.); *Chelisia* (Rond.), 1 species, *monilis* (Meig.); *Mycophaga* (Rond.), 2 species, 1 new, type *fungorum* (R. D.); *Syllegoptera* (Rond.), 1 species, *ocypterata* (Meig.); *Oplogaster* (Rond.), 2 species, 1 new, type *mollicula* (Fall.); *Atherigona* (Rond.), 1 species, *quadri-*

punctata (Rossi); *Cænosia*, 20 species, 12 new, type *geniculata* (Fall.); *Caricea*, 3 species, 1 new, type *tigrina* (Fall.); *Lispa*, 9 species, 4 new, type *tentaculata* (De G.).

Jaennicke states (Abh. Senck. Ges. vi. p. 373) that *Anthomyia limbata* (Wied.) belongs to *Hylemyia* (R. Desv.); *A. arcuata* (Wied.) to *Aricia* (R. Desv.); and *A. dichroma, spiloptera, gemina*, and *nigrina* (Wied.), and *grisea* (Fab.) to *Spilogaster* (Macq.).

Mik describes the ♀ of *Spilogaster divisa* (Meig.). Verh. zool.-bot. Ges. in Wien, xvii. p. 422.

New genera:—

Aspilia, g. n., Rondani, Atti Soc. Ital. ix. pp. 70 & 86. (See Table, p. 426.) Known sp. *A. sundewalli* (Zett.) and *A. allotalla* (Meig.). New sp. *A. glacialis, brumalis*, and *funeralis*, Rond. *l. c.* p. 88, and *A. rupestris*, Rond. *l. c.* p. 89, Italy.

Piezura, g. n., Rondani, *l. c.* pp. 71 & 122. (See Table, p. 426.) Sp. *P. pardalina*, sp. n., Rond. *l. c.* p. 122, Parma.

Melanochelia, g. n., Rondani, *l. c.* pp. 72 & 136. (See Table, p. 426.) Sp. *Aricia surda* (Zett.).

Acyglossa, g. n., Rondani, *l. c.* pp. 74 & 175. (See Table, p. 427.) Sp. *A. diversa*, sp. n., Rond. *l. c.* p. 175, Parma and Naples.

New species:—

Hydrotæa tuberculata, Rondani, Atti Soc. Ital. ix. pp. 77 & 79, Piedmont. [The species identified by Rondani with *H. irritans* (Fabr.) may be distinct, in which case the author proposes for it the name of *H. scopitarsis*, *l. c.* p. 81.]

Onodontha penicillata, Rondani, *l. c.* p. 82, Italy (=*floccosa*, Rond. nec Macq.).

Vetodesia. Of this genus Rondani describes (*l. c.*) as new Italian species:—*V. meridionalis*, p. 97; *V. ruficrura* and *dilata*, p. 101; *V. boleticola*, p. 103; *V. tinctipennis*, p. 104; *V. bitincta* and *stolata*, p. 106; and *V. lateritia*, p. 107.

Spilogaster. Of this genus Rondani (*l. c.*) describes 9 new Italian species, namely:—*S. hirticrura*, p. 113; *S. flagripes*, p. 114; *S. calceata*, p. 115; *S. cothurnata* and *sigillata*, p. 116; *S. obsignata*, p. 117; *S. indistincta*, p. 119; *S. montana* and *ustipennis*, p. 121.

Spilogaster dexiæformis, Mik, Verh. zool.-bot. Ges. in Wien, xvii. p. 418, pl. 10. fig. 5, Austria; *S. wierzejskii*, Mik, *l. c.* p. 420, pl. 10. figs. 7–9, Halicia.

Spilogaster. Jaennicke (Abh. Senck. Gesellsch. vi.) describes 5 new species of this genus, namely:—*S. wideri*, p. 368, *S. nigritarsis*, p. 369, *S. fasciata*, p. 370, and *S. osten-sackenii*, p. 371, Abyssinia; and *S. calliphoroides*, p. 371, Brazil.

Homalomya [sic]. Of this genus Rondani (*l. c.*) describes the following 8 new Italian species:—*H. passerinii* and *roserii*, p. 126; *H. schembrii* and *pallitibia*, p. 127; *H. cilicrura*, p. 128; *H. herniosa* and *triangulifera*, p. 130; and *H. brevis*, p. 132.

Azelia parva, Rondani, *l. c.* p. 134, Parma; *A. zetterstedtii*, Rond. *l. c.* p. 135, Denmark.

Hydrophoria anthomyea, Rondani, *l. c.* p. 141, Parma.

Anthomyia. The following 5 new Italian species are described by Ron-

dani (*l. c.*) :—*A. procellaris*, p. 147, *A. imbrida* and *dedecorata*, p. 148, *A. ulmaria*, p. 150, and *A. digitaria*, p. 152.

Anthomyia abyssinica, Jaennicke, *l. c.* p. 372, Abyssinia; *A. chilensis*, Jaen. *l. c.* p. 373, Chili.

Anthomyia manillensis, Frauenfeld, Verh. zool.-bot. Ges. in Wien, xvii. p. 449, pl. 12. fig. 12, on board the 'Novara' after leaving Manilla.

Chorthophila. Rondani (*l. c.*) describes 16 new Italian species, namely :—*C. terminalis* and *chenopodii*, p. 162; *C. cuniculuria* (Piccioli, MS.), *perforans* and *effodiens*, p. 163; *C. sulcans* (Schembri, MS.), *terebrans* (Tacchetti, MS.), and *trichodactyla*, p. 164; *C. ciliicrura*, p. 165; *C. laminifera*, p. 167; *C. incognita* and *ignota*, p. 168; *C. histricina*, p. 169; *C. divergens*, p. 170; *C. pudica* and *impudica*, p. 173.

Hylemyia. Seven new Italian species of this genus are described by Rondani (*l. c.*) :—*H. seticrura*, p. 179; *H. penicillaris*, p. 180; *H. spinosa*, p. 181; *H. tibiaria* and *bracata*, p. 183; *H. garbiglietti*, p. 184; and *H. arrogans*, p. 185.

Hylemyia simensis, Jaennicke, *l. c.* p. 372, Abyssinia.

Mycophaga boletorum, Rondani, *l. c.* p. 189, Parma.

Oplogaster cincticula, Rondani, *l. c.* p. 191, Piedmont.

Cœnosia. Rondani (*l. c.*) describes the following 12 new Italian species of this genus :—*C. infantula*, p. 197; *C. elegantula* and *nigridigita*, p. 198; *C. barbipes* and *villipes*, p. 199; *C. genualis* and *angulata*, p. 200; *C. octosignata*, p. 202; *C. sexpustulata* and *obscuripes*, p. 203; and *C. agromizella* and *patelligera*, p. 205.

Cœnosia pseudomollicula, Frauenfeld, *l. c.* p. 450, on board the 'Novara,' between St. Paul and Ceylon.

Caricea felina, Rondani, *l. c.* p. 207, Parma.

Lispa. Four new Italian species are described by Rondani (*l. c.*), namely :—*L. suturata*, p. 210; *L. melitensis* and *meridionalis*, p. 211; and *L. leucospyla*, p. 213.

Sarcophagides.

Goureau (Insectes nuisibles, &c.) notices the habits of the meatflies (pp. 176–184), such as *Calliphora vomitoria* and *fulvibarbis*, and *Sarcophaga carnaria* and *hæmorrhoidalis*. He states that he bred a specimen of *Figites scutellaris* (Lat.) from a pupa of *Sarc. agricola* (p. 183).

Onesia bivittata and *O. muscaria*, sp. n., Jaennicke, *l. c.* p. 378, Chili.

Cynomyia desvoidyi, sp. n., Jaennicke, *l. c.* p. 378, Chili.

Sarcophaga octomaculata, sp. n., Jaennicke, *l. c.* p. 379, Massana; *S. nubica*, sp. n., Jaen. *l. c.* p. 380, Nubia.

Muscides.

Goureau (Insectes nuisibles) notices a considerable number of species belonging to this subfamily as being directly or indirectly injurious to man. He describes :—the species of *Stomoxys* (*calcitrans* and *chrysocephala*) and *Hæmatobia* (*irritans*, *pungens*, and *serrata*) which render themselves obnoxious by sucking the blood of man and animals (pp. 158–163); the common *Musca domestica* (pp. 163–166); the flies which plague cattle merely by settling on them (167–173), among which he includes *Musca bovina*, *corvina*, *vaccina*, *vagatoria*, *vitripennis*, *carnifex*, and *hortorum*; *Pollenia rudis* (p. 173) as frequenting houses.

Cyrtoneura stabulans. Kawall (Stett. ent. Zeit. 1867, p. 120) has observed the larva of this species in old soft cheese.

Lucilia. Jaennicke (Abh. Senck. Gesellsch. vi.) describes the following new species of this genus:—*L. barthii*, p. 374, and *L. spekei*, ibid., Massana; *L. rufipalpis*, p. 375, and *L. sayi*, ibid., Illinois; and *L. luteicornis*, p. 375, Venezuela.

Lucilia leucodes, sp. n., Frauenfeld, *l. c.* p. 453, on board the 'Novara' in the Chinese sea.

Calliphora croceipalpis, sp. n., Jaennicke, *l. c.* p. 376, Massana; *C. fuscipennis*, Jaen. ibid., Brazil.

Mesembrina anomala, sp. n., Jaennicke, *l. c.* p. 377, pl. 44. fig. 4, Cuba.

Helomyzides.

According to Jaennicke (*l. c.* p. 368) *Tetanocera limbata* (Wied.)=*Phecomyia longicornis* (Perty).

Sapromyzides.

Rondani has published (Atti Soc. Ital. Sci. Nat. x. pp. 85–135) a synopsis of the Italian species of Scatophaginæ, including an analytical table and characters of the genera and species admitted by him. The new genera and species will be noticed below.

New genera:—

Spaziphora, g. n., Rondani, Atti Soc. Ital. Sci. Nat. x. pp. 86 & 91. Allied to *Cleigastra*; palpi dilated into a subpapyraceous, spathulate form; fifth longitudinal vein produced beyond apex of third. Type *Cordylura hydromyzina* (Fall.)=*Hydromyza fallenii* (Schin.).

Gonatherus, g. n., Rondani, *l. c.* pp. 87 & 93. Allied to *Cleigastra*; arista nearly naked or puberulous; tibiæ with no long villosity within; palpi not dilated in a spathulate form; face not inclined, mouth reflexed; eyes ovate. Type *Scatomyza planiceps* (Fall.)=*friesii* (Zett.).

Cnemopogon, g. n., Rondani, *l. c.* pp. 87 & 94. Allied to *Cleigastra*; palpi subcylindric; face not inclined; antennæ elongate, joint 3 about four times as long as 2, seta pilose or plumulose. Type *Cordylura apicalis* (Meig.).

Achantholena [sic], g. n., Rondani, *l. c.* pp. 88 & 102. Allied to *Norellia*; arista nearly naked; posterior tibiæ without setæ; head elongate behind eyes. Sp. *A. maculipennis*, sp. n., Rondani, *l. c.* p. 102, Parma (?=*spinipes*, Schin. nec Fall.).

Gimnomera [sic], g. n., Rondani, *l. c.* pp. 88 & 105. Allied to *Cleigastra*; hypostome not margined with setæ; legs all naked; scutellum 4-setose; longitudinal vein 7 distant from posterior margin. Type *Cordylura tarsea* (Fall.).

Trichopalpus, g. n., Rondani, *l. c.* pp. 89 & 106. Allied to preceding; longitudinal vein 7 attaining posterior margin; legs more or less setigerous. Sp. *Cordylura punctipes* and *fraterna* (Meig.).

New species:—

Cordylura impudica, Rondani, Atti Soc. Ital. Sci. Nat. x. p. 97, Parma; *C. nigriseta*, Rond. *l. c.* p. 98, Parma and Piedmont; *C. fuscitibia*, Rond. ibid., Parma and Florence.

Norellia roserii, Rondani, *l. c.* p. 101, Germany; *N. bertei*, Rond. ibid., Parma.

Scatina fluvialis, Rondani, *l. c.* p. 113, and *S. fontanalis* [sic], Rond. *l. c.* p. 114, Parma.

Helomyza agaricina, Rondani, *l. c.* p. 119, Parma; *H. tuberiperda*, Rond. *l. c.* p. 122, Italy; *H. agnata*, Rond. *l. c.* p. 123, Parma (=*affinis*, Zett. nec Meig.); *H. pilimana*, Rond. ibid., Parma; *H. flavitarsis*, Rond. *l. c.* p. 124, Parma.

Leria bracata [sic], Rondani, *l. c.* p. 127, Italy; *L. chetomera* [sic], Rond. ibid., North Italy; *L. puerula*, Rond. *l. c.* p. 128, Parma.

Thelida diversa, Rondani, *l. c.* p. 129, Insubria.

Phycodromya meridionalis, Rondani, *l. c.* p. 132, Malta.

Sapromyza taitensis, Frauenfeld, *l. c.* p. 455, pl. 12. fig. 11, Tahiti.

Ortalides.

H. Loew (Berl. ent. Zeitschr. 1867, pp. 283–284) remarks upon the divisions which may be recognized in this group. He divides it into two main sections, the first having the first longitudinal vein setiferous or hairy, the second having this vein naked. The latter may be again divided into two groups, according as the femora are unarmed or distinctly spinous beneath. The group with spinous femora is exclusively American. Loew proposes to give it the name of Richardina, the genus *Richardia* being its best-known representative. The group with unarmed femora is represented in Europe by the genera *Scoptera* (Kirby), *Timia* (Wied.), *Ulidia* (Meig.), *Chrysomyza* (Fall.), and *Empyelocera* (Loew). It is denominated by Loew Ulidina. *Empyelocera* is peculiarly European; the other genera occur in Asia and, with the exception of *Scoptera*, also in Africa. America includes numerous forms of Ulidina, but *Scoptera* is the only genus common to both hemispheres. This and *Eumetopia* (Macq.) are the only two described genera. The species of the latter (*E. rufipes*, Macq., and *E. varipes*, Loew) are figured (pl. 2. figs. 25, 26).

Künckel and Laboulbène notice the destruction of numerous plants of a species of *Anthemis* by a dipterous larva, probably that of *Tephritis anthemisiæ* (Westw.). Bull. Soc. Ent. Fr. 1867, p. lii.

New genera:—

Dasymetopa, g. n., Loew, Berl. ent. Zeits. 1867, p. 285. Forehead broad, narrower in front; face not hollowed; clypeus projecting; antennæ short, joint 3 elongate-ovate; scutellum flat, with 4 setæ; pterostigma very large, posterior transverse vein oblique, apical section of fourth longitudinal vein strongly bent forward. Sp. *D. lutulenta*, sp. n., Loew, *l. c.* p. 285, p. 2. fig. 1, Surinam.

Œdopa, g. n., Loew, *l. c.* p. 287. Head very large; forehead remarkably broad; face broad, especially its lateral portions, which are distinctly separated; antennæ distant, very short; scutellum flat, with 4 setæ; apical section of fourth longitudinal vein somewhat bent forwards, posterior transverse vein strongly sigmoid. Sp. *Œ. capito*, sp. n., Loew, *l. c.* p. 287, pl. 2. fig. 2, Nebraska.

Notogramma, g. n., Loew, *l. c.* p. 289.—Forehead moderately and uniformly broad, pitted; face very short, buccal margin much drawn up, clypeus projecting far beyond it; antennæ rather long, joint 3 elongate; scutellum flat and sharp-edged; fourth longitudinal vein with second half of its apical

section remarkably bent forward, posterior transverse vein perpendicular. Sp. *N. cimiciformis*, sp. n., Loew, *l. c.* p. 289, pl. 2. fig. 3, Cuba.

Euphara, g. n., Loew, *l. c.* p. 291. Forehead of moderate, uniform breadth, pitted; face excavated, clypeus projecting; antennæ longish; scutellum convex, with 4 setæ; last section of fourth longitudinal vein parallel with third, small transverse vein rather near the posterior transverse vein, which is perpendicular. Sp. *Ceroxys cærulea* (Macq.), pl. 2. fig. 4.

Acrosticta, g. n., Loew, *l. c.* p. 293. Forehead, face, and scutellum as in preceding; antennæ short, joint 3 elongate-ovate; last section of fourth longitudinal vein converging towards third, posterior transverse vein perpendicular, stigma narrow and very long. Sp. *A. scrobiculata*, sp. n., Loew, *l. c.* p. 293, pl. 2. fig. 5, and *A. foveolata*, sp. n., Loew, *l. c.* p. 294, Brazil.

Euxesta, g. n., Loew, *l. c.* p. 297. Forehead of moderate, uniform breadth, even; face more or less excavated, clypeus projecting; antennæ short, joint 3 round or roundish; scutellum convex, with 4 setæ. Sp. *Ortalis notata* (Wied.), pl. 2. fig. 9; *Musca costalis* (Fab.)=*Dacus aculeatus* (Fab.), pl. 2. fig. 10; *M. annonæ* (Fab.)=*Urophora quadrivittata* (Macq.), pl. 2. fig. 13; *Ortalis sororcula* (Wied.), pl. 2. fig. 20. N. sp. *E. spoliata*, Loew, *l. c.* p. 298, pl. 2. fig. 7, *E. pusio*, Loew, *l. c.* p. 299, pl. 2. fig. 8, *E. quaternaria*, Loew, *l. c.* p. 302, pl. 2. fig. 11, *E. binotata*, Loew, *l. c.* p. 304, pl. 2. fig. 12, *E. abdominalis*, Loew, *l. c.* 307, pl. 2. fig. 15, and *E. eluta*, Loew, *l. c.* p. 312, pl. 2. fig. 19, Cuba; *E. stigmatias*, Loew, *l. c.* p. 310, pl. 2. fig. 18, Cuba and Brazil; *E. thomæ*, Loew, *l. c.* p. 306, pl. 2. fig. 14, St. Thomas; *E. alternans*, Loew, *l. c.* p. 308, pl. 2. fig. 16, and *E. atripes*, Loew, *l. c.* p. 309, pl. 2. fig. 17, Brazil.

Chætopsis, g. n., Loew, *l. c.* p. 315. Forehead a little narrower towards vertex, with setiform hairs on the lateral margins; antennæ rather short, joint 3 slightly emarginate above, with an acute anterior angle; last section of fourth longitudinal vein slightly converging towards third at its end. Sp. *Ort. ænea* (Wied.)=*O. trifasciata* (Say)=*Urophora fulvifrons* (Macq.), pl. 2. fig. 21; *C. debilis*, sp. n., Loew, *l. c.* p. 318, pl. 2. fig. 22, Cuba.

Hypæcta, g. n., Loew, *l. c.* p. 318. Forehead rather broad, uniform, finely hairy only at lateral margins; face not excavated, clypeus rudimentary; antennæ short, joint 3 strongly emarginate above; hinder angle of anal cell open, last section of fourth longitudinal vein slightly converging, transverse vein perpendicular. Sp. *H. longula*, sp. n., Loew, *l. c.* p. 319, pl. 2. fig. 23, Brazil.

Stenomyia, g. n., Loew, *l. c.* p. 320. Forehead of uniform breadth, hairy at margins of eyes, and with two long isolated hairs; face not excavated, clypeus of moderate transverse diameter; joint 3 of antennæ scarcely emarginate, but with anterior angle acute; last section of fourth longitudinal vein twice as long as preceding one, gently convergent, posterior transverse vein nearly perpendicular. Sp. *S. tenuis*, sp. n., Loew, *l. c.* p. 321, pl. 2. fig. 24, Georgia.

Epiplatea, g. n., Loew, *l. c.* p. 324. Forehead broad, narrower in front, not prominent in profile, hairy all over; face perpendicular, impressed beneath each antenna, convex between the impressions; wings short, third longitudinal vein curved backwards at the end, last section of fourth longitudinal vein not convergent. Sp. *E. erosa*, sp. n., Loew, *l. c.* p. 325, pl. 2. fig. 27, Cuba.

New species:—

Scoptera colon, Loew, *l. c.* p. 296, pl. 2. fig. 6, Brazil.

Urophora dzieduszyckii, Frauenfeld, Verh. zool.-bot. Ges. in Wien, xvii. p. 498, pl. 12. fig. 21, Cracow?

Orellia bucchichi, Frauenfeld, *l. c.* p. 500, Lesina.

Platystoma frauenfeldi, Nowicki, Verh. zool.-bot. Ges. in Wien, xvii. p. 352, pl. 11. fig. 2, Podolia.

Psilides.

Piophilus casei. Goureau (Insectes nuisibles, pp. 184–187) describes the characters and habits of this species.

Oscinides.

Schiner (Verh. zool.-bot. Ges. in Wien, xvii. pp. 325–328) discusses the position of *Ochthiphila litorella* (Fall.), which he considers to have been correctly placed by Haliday in the genus *Schœnomyia*. Schiner regards this form as most nearly allied to the *Milichiæ*.

Chlorops strigula (Fab.). Kunstler reports on this insect as injurious to corn-crops. Verh. zool.-bot. Ges. in Wien, xvii. pp. 935–940.

Dr. Krauss (Württ. naturw. Jahresh. xxii. p. 128) records the occurrence of immense quantities of a species of *Chlorops* (*lœta* or *geminata*) in the neighbourhood of Stuttgart in the autumn of 1865.

Perty (Mitth. naturf. Ges. in Bern, 1867, pp. 233–237) notices the abundant occurrence near Berne of a species of *Oscinis* (*Chlorops*) nearly allied to *Chlorops lineata*.

Geomyzides.

Drosophila cellaris. The characters and habits of this species are described by Goureau (Insectes nuisibles, pp. 188, 189).

Pholcomyia, g. n., Bilimek, Verh. zool.-bot. Ges. in Wien, xvii. p. 903. Allied to *Milichia*; proboscis short, with narrow lips (*Saugfläche*) and nearly spoon-shaped palpi; eyes oval, not hairy; scutellum obtusely rounded. Sp. *P. leucozona*, Bilimek, *l. c.* p. 903, Mexico (Cave of Cacahuamilpa).

Hydromyzides.

Teichomyza fusca (Macq.). A. Laboulbène describes and figures this species in all its stages, with full details of the structure of the larva (Ann. Soc. Ent. Fr. 4e sér. vii. pp. 33–42, pl. 5). The fly is exceedingly abundant in the public urinals in France, and the larva lives in human urine. Laboulbène identifies with it the larvæ described and figured by Davaine in 1857 as having been evacuated from the intestines of a woman after she had suffered much pain.

Hydrellia griseola (Fall.). Stein (Berl. ent. Zeits. 1867, pp. 395–397), from the observations of Münter, records the larva of this species as injurious to barley in the neighbourhood of Greifswald. He figures the larva and the imago, and also gives much enlarged figures of the wing and antennæ of the latter (*l. c.* pl. 3. figs. 7–10).

Cyphops, g. n., Jaennicke, Abh. Senck. Ges. vi. p. 367. Allied to *Ephydra*; head bare, triangular from above, quadrate from the side; epistoma inflated; proboscis stout; palpi short, clavate, compressed; antennæ inserted beneath

frontal margin, distant, short, joint 1 very short, 2 with a short seta at base and apex, 3 long, with a long seta pectinate above; first longitudinal vein simple, third and fourth convergent, anal and posterior basal cells wanting, small transverse vein before the middle of the wing. Sp. *C. fasciatus*, sp. n., Jaen. *l. c.* p. 368, pl. 43. fig. 14, Java.

Discomyza pelagica, sp. n., Frauenfeld, Verh. zool.-bot. Ges. in Wien, xvii. p. 451, pl. 12. fig. 13, from the Nicobars and on board the 'Novara' near Sumatra.

Œstridæ.

Goureau (Insectes nuisibles, pp. 149–158) describes the general characters and habits of the insects of this family, and gives a description of the appearance and natural history of the following species:—*Hypoderma bovis*, *Œstrus equi*, *hæmorrhoidalis*, *nasalis*, and *Cephalemyia ovis*.

Platypezidæ.

Platypeza superba, sp. n., Kowarz, Verh. zool.-bot. Ges. in Wien, xvii. p. 322 (wing figured), and *P. barbata*, sp. n., Kowarz, *l. c.* p. 323 (wing figured), Losoncz.

Syrphidæ.

Eumerus æneus (Macq.). The larva of this species feeds on the *Aphides* which form galls on the Elm and Poplar; its habits are described by Goureau, Bull. Soc. Ent. Fr. 1867, p. lxxxvi.

New species:—

Merodon knerii, Mik, Verh. zool.-bot. Ges. in Wien, xvii. p. 415, pl. 10. figs. 3, 4, Galicia.

Pipiza jablonskii, Mik, *l. c.* p. 417, pl. 10. figs. 1, 2, Galicia.

Volucella maximiliani, Jaennicke, Abh. Senck. Gesellsch. vi. p. 395, *V. mellea*, Jaen. *l. c.* p. 396, and *V. haagii*, Jaen. *l. c.* p. 397, Mexico.

Syrphus octoguttatus, Jaennicke, *l. c.* p. 398, Chili; *S. hecticus*, Jaen. ibid., Illinois.

Eristalis. Of this genus Jaennicke describes (*l. c.*):—*E. thoracica*, p. 399, *E. tricolor*, p. 400, and *E. bellardii*, ibid., Mexico; *E. ursinus*, p. 401, Java; and *E. tabanoides*, p. 402, pl. 44. fig. 4, Massana.

Milesia meyeri, Jaennicke, *l. c.* p. 403, pl. 44. fig. 11, Java.

Chrysogaster lugubris, Jaennicke, *l. c.* p. 404, Chili.

Conopidæ.

Myopa insignis, sp. n., Jaennicke, Abh. Senck. Gesellsch. vi. p. 404, Simen.

Zodion splendens, sp. n., Jaennicke, *l. c.* p. 405, Mexico.

Hippoboscidæ.

Goureau (Insectes nuisibles, pp. 189–192) describes the characters and habits of *Hippobosca equina* and *Melophagus ovinus*.

Giebel records the occurrence of 24 ♀ specimens of *Stenopteryx hirundinis* on a Swift. Zeitsch. ges. Naturw. xxx. p. 126.

Hippobosca wahlenbergiana, sp. n., Jaennicke, Abh. Senck. Gesellsch. vi. p. 406, pl. 44. fig. 13, Caffraria.

Ornithomyia javana, sp. n., Jaennicke, *l. c.* p. 406, pl. 44. fig. 14, Java.

APHANIPTERA.

L. LANDOIS (Nova Acta &c. xxxiii.) publishes an elaborate anatomy of *Pulex canis*, illustrated with seven plates. He discusses the various systematic positions that have been assigned to the *Pulicidæ*, and adopts the opinion originally propounded by De Geer, that these insects should form a distinct order, for which De Geer's name "Suctoria," or Latreille's "Siphonaptera" may be retained.

GOUREAU (Insectes nuisibles, pp. 192–197) describes the general natural history of the Insects of this group, and characterizes the European species which especially attack man and the domestic animals, such as *Pulex irritans*, *canis*, *felis*, and *columbæ*.

GUYON has continued his memoir on the Chigoe, Rev. et Mag. de Zool. 1867, pp. 7–15, 208–211, 276–290, and 324–327, plates 1 & 2.

LABOULBÈNE records the occurrence of two examples of *Pulex penetrans* in the foot of a person who had recently arrived in France from Pernambuco. Bull. Soc. Ent. Fr. 1867, p. vi.

NEUROPTERA.

BRAUER, FRIEDRICH. Beitrag zur Kenntniss der Mantispiden-Gattungen. Verhandl. zool.-bot. Gesellsch. in Wien, Band xvii. pp. 281–286.

——. Beschreibung neuer Neuroptera aus dem Museum Godeffroy und Sohn in Hamburg. Ibid. pp. 505–512.

——. Ueber *Myrmeleon sinuatum*, Oliv., als Beitrag zur Kenntniss der Myrmeleoniden-Genera, *Palpares*, *Stenares*, und *Acanthaclisis*. Ibid. pp. 519–520.

——. Beschreibung und Verwandlung des *Dendroleon pantherinus*, Fbr., und Vergleich der bis jetzt bekannten Myrmeleoniden- und Ascalaphiden-Larven. Ibid. pp. 963–966, pl. 14.

——. Larve von *Hypochrysa nobilis*, Heyd. Ibid. pp. 27–30, pl. 9.

This paper contains notices of the larvæ of 3 species of *Hemerobiidæ*.

EATON, A. E. On some British Neuroptera. Annals & Mag. Nat. Hist. 3rd ser. vol. xix. pp. 395–401.

FRAUENFELD, G. VON. (See "INSECTA.")

HAGEN, H. A. Notes on the genus *Raphidia*. (Translated by R. M'Lachlan.) Trans. Ent. Soc. Lond. 3rd ser. vol. v. pp. 493–499: May 1867.

HASSELT, A. W. M. VAN. Kleine Entomologische Mededeelingen.—No. 6. Jets over de Phryganiden. Tijdschrift voor Entom. 2de serie, Deel i. pp. 211–215.

A notice of M. E. Smee's paper on the *Phryganidæ* and their cases.

M'Lachlan, Robert. New genera and species &c. of Neuropterous Insects; and a revision of Mr. F. Walker's British-Museum Catalogue of *Neuroptera*, part ii. (1853), as far as the end of the genus *Myrmeleon*. Journal Linn. Soc. vol. ix. Zool. pp. 230–281, plate 8: 1867.

——. Bemerkungen über europäische Phryganiden, nebst Beschreibung einiger neuer Genera und Species. Stettiner entom. Zeitung, 1867, pp. 50–63.

——. Notes on British Trichoptera. Entom. Annual, 1868, pp. 1–7.

Meyer, A. Beiträge zu einer Monographie der Phryganiden Westphalens. Stettiner entom. Zeitung, 1867, pp. 153–169.

Contains a few remarks on the natural history of the *Phryganidæ*, and a list of the species found by the author in Westphalia, with notes on their habits, occurrence, &c.

Scudder, S. H. An Inquiry into the Zoological Relations of the first-discovered traces of Fossil Neuropterous Insects in North America; with Remarks on the difference of structure in the wings of living Neuroptera. Mem. Bost. Soc. Nat. Hist. vol. i. pp. 173–192, plate 6: 1867.

In this valuable paper Scudder not only describes some fossil insects lately discovered in the Carboniferous strata of North America, but discusses in considerable detail the peculiarities of venation which serve to characterize the different families of Neuroptera (Linn.). The paper will be found especially important to the student of fossil insects.

Selys-Longchamps, — de. Notice sur une nouvelle espèce de Névroptère. Annales de la Soc. Ent. de Belgique, tome x. pp. 253–255, pl. 2: 1866.

Tomes, C. S. An account of a Trichopterous larva. Quarterly Journ. Micr. Sci. vol. xv. pp. 248–251, pl. 9.

Westwood, J. O. Descriptions of new species of *Mantispidæ* in the Oxford and British Museums. Trans. Ent. Soc. Lond. 3rd ser. vol. v. pp. 501–508: May 1867.

This paper contains also a description of a new *Nemoptera*.

M'Lachlan has published (Journ. Linn. Soc. ix. Zool. pp. 258–281) a revision of a portion of Walker's Catalogue of Neuroptera, including his families Sialidæ, Hemerobiidæ, and Myrmeleonidæ. He indicates the generic and specific synonymy, and gives detailed descriptions of some of the species.

Frauenfeld (Verh. zool.-bot. Ges. in Wien, xvii. pp. 431 and 445) notices several species of this order taken on board the 'Novara.'

Myrmeleontidæ.

M'Lachlan, in his revision of the species of this family included in Walker's Catalogue (Journ. Linn. Soc. ix. Zool. pp. 273–281), first of all discusses the generic divisions proposed in it by Hagen (see 'Record,' 1866, p. 515), and expresses his opinion that eventually many of these will require subdivision. He estimates the probable number of species at 500. The following synonymic indications are given with regard to the species enumerated by Walker:—

Myrmeleon gigas, contrarius, inclemens, patiens, libelluloides, speciosus, infimus, pardus, and *incommodus* belong to *Palpares*; *M. sollicitus* = *Palpares cephalotes* (Klug); *M. cephalotes* = probably *P. cephalotes* (Ramb. nec Klug); *M. furfuraceus,* probably identical with the last; *M. tigris* = *P. manicatus* (Ramb.) = probably *tigris* (Dalm.); *M. subducens* = *P. cephalotes* (Klug); *M. pardalinus* is distinct from *pardalinus* (Burm.), and receives the name of *Palpares*? *brachypterus* (*l. c.* p. 275); *M. occitanicus* belongs to *Acanthaclisis*; *M. distinctus* not *distinctus* (Ramb.), according to Hagen; *M. edax* = *gulo* (Burm.), according to Hagen; *M. longicollis* not Rambur's species; these three belong to *Acanthaclisis*; as do also *M. fundatus, subtendens, feralis, inclusus,* and *horridus* (Walk.); *M. molestus* = *Acanth. distincta* (Walk.); *M. ferus* = *A. atra* (Fab.); *M. impostor* = *A. fallax* (Ramb.); *M. peritus* = *Stenares hyæna* (Dalm.); *M. improbus* is a *Stenares*; *M. longicaudus* = *Macronemurus abdominalis* (Say); *M. conspersus* = *Macron. irroratus* (Ramb.); *M. nebulosus, iniquus, immitis, versutus, ferox, appendiculatus, nefandus, barbarus, abditus,* and *callidus* belong to *Macronemurus*; *M. insidiosus* = *Macron. appendiculatus* (Lat.); *M. anomalus, infestus, tacitus, gratus, pulchellus, falsus, erythrocephalus* (?), *singularis,* and *circuiter* belong to *Glenurus*; *M. nigrocinctus* = *Glenurus obsoletus* (Say); *M. tetragrammicus, ingeniosus, audax, gravis, striola, verendus, vesanus, pugnax* (perhaps = *mustelinum,* Fab.), *vafer, dirus, truculentus, cautus, durus, tappa* (perhaps ♀ *vesanus*), and *insomnis,* belong to *Formicaleo*; *M. perjurus, torvus,* and *violentus* = *F. striolâ* (Leach), of which *M. bistrigatus* (Ramb.) is probably a variety; *M. lentus* = *F. dirus* (Walk.); *M. desperatus, perniciosus,* and *malefidus* = *F. vafer* (Walk.); *M. acer, formicarius, inopinus, lanceolatus, leachii, tristis, lethalis, lethifer, exitialis, acutus, tectus, asper, malignus, immanis, sævus, sagax, infensus, dolosus, hostilis, metuendus, exsanguis, crudelis,* and *morosus* belong to *Myrmeleon*; *M. innotatus* = *formicalynx* (Linn.); *M. inconspicuus* = *leachii* (Guild.); *M. secretus* = *alternans* (Brullé); *Europeus* = *asper* (Walk.); *M. fictus* = *malignus* (Walk.); *M. perfidus, afri-Halesus nigaps* = *plumbeus,* Oliv.), and *mortifer* belong to *Creagris*; *M. e-* (M'Lachl.) *pervigil* = *Creagris mortifer* (Walk.); *M. pallidipennis* and *lugduirroratus* = *C. plumbeus* (Oliv.); *M. sedulus* and *adversus* = *C. perfidus* (Walk.); *M. infidus, acerbus, mendax, solers, implexus,* and *atrox* belong to *Myrmecelurus*; *M. flavus* = *Myrmec. trigrammus* (Pall.); *M. iners* = *Myrmec. atrox* (Walk.); *M. efferus* and *prædator* belong to *Megistopus*; *M. notatus* = *Megist. flavicornis* (Rossi); *M. occultus* and *malus* belong to *Gymnocnemia*; *M. subdolus* is a *Dimares*; *M. astutus* is a *Tomateres*; *M. compositus* = *Tomateres pardalis* (Fab.); and *M. translatus* = *Pamexis conspurcatus* (Burm.), to which *M. pardalinus* (Burm.) seems to be nearly allied. M'Lachlan identifies a

South-African species with *Myrmeleon punctatus* (Fab.), and gives a description of it (*l. c.* p. 279).

Brauer remarks (Verh. zool.-bot. Ges. in Wien, xvii. pp. 519–520) that *Myrmeleon sinuatum* (Oliv.) is the species figured by Seba (Thes. pl. 86. fig. 5), and is very nearly allied to *Palpares hæmatogaster* (Gerst.), both belonging to the genus *Stenares*. Brauer also states that in *Acanthaclisis fundata* (Walk.)=*fallax* (Ramb.) the spurs are only bent and not geniculate, so that a new character is wanting for the genus.

Brauer (Verh. zool.-bot. Ges. in Wien, xvii. pp. 963–966, pl. 14. fig. 3) describes and figures the larva of *Dendroleon pantherinus* (Fab.), and indicates the general characters of the known larvæ of insects of this family.

Crambomorphus, g. n., M'Lachlan, Journ. Linn. Soc. ix. Zool. p. 243. Allied to *Stenares*; labial palpi robust, last joint clavate, much thickened; head and thorax very hairy; wings nearly equal, coriaceous, elongate, subfalcate, dorsal and apical margins broadly sinuate; costal area biareolate at base; postcosta in hind wings furcate, marginal anastomosis with a recurved branch. Sp. *Palpares hæmatogaster* (Gerst.)=probably *M. sinuatum* (Oliv.).

Echthromyrmex, g. n., M'Lachlan, *l. c.* p. 243. Allied to *Dimares*; antennæ slender, club acuminate; wings spotted, narrowed at base, much dilated and rounded at apex, costal area uniareolate, transverse veins very numerous, cells quadrate; posterior with the postcosta simple; legs short, very spinous, spurs equal to joint 1 of tarsi. Sp. *E. platypterus*, sp. n., M'Lachl. *l. c.* p. 244, Bagdad.

New species :—

Palpares falcatus, M'Lachlan, Journ. Linn. Soc. ix. Zool. p. 236, Burmah; *P. fulvus*, M'Lachl. *l. c.* p. 237, South Africa; *P. immensus*, M'Lachl. *l. c.* p. 239, Damara Land; *P. sparsus*, M'Lachl. *l. c.* p. 240, Damara Land and Zambesi; *P. damarensis*, M'Lachl. *l. c.* p. 241, Damara Land; and *P. flavofasciatus*, M'Lachl. *l. c.* p. 242, Damara Land.

Creagris nigro-strigatus, M'Lachlan, *l. c.* p. 245, Natal.

Glenurus pustulatus, M'Lachlan, *l. c.* p. 246, Ceylon; and *G. japonicus*, M'Lachl. *l. c.* p. 248, Japan.

Hemerobiidæ.

M'Lachlan, in his revision of the species of this group cited in Walker's Catalogue (Journ. Linn. Soc. ix. Zool. pp. 261–273), gives the following synonymic indications:—Walker's *Mantispa prolixa* is not *prolixa* (Erichs.); *M. pagana*=*styriaca* (Poda); *M. perla* is doubtful; *M. biseriata* is the type of a new genus, *Ditaxis*; *Raphidia varia*=*Trichoscelia varia* (Walk.)=*M. myrapetrella* (Westw.): the latter name must be retained, as there is a *M. varia* (Erichs.); *Hoplophora* belongs to the Mantidæ; *Ny[illegible]neus* is probably a *Myiodactylus*; *N. sejunctus* is also a *Myiodact[illegible]*; Zool. pp. described in detail (*l. c.* p. 263); *Osmylus chrysops*=*maculatus* (F[illegible]rue of *strigatus* is the type of a new genus, *Porismus*; *O. validus*=*Polystœchotes punctatus* (Fab.); *O. tenuis* is the type of the new genus *Stenosmylus*; *Chrysopa vittata* is mixed; *C. concolor*=*congrua* (Walk.); *C. vulgaris* is mixed; *C. divisa*=*collaris* (Schn.); *C. hybrida* is not *hybrida* (Schn.); *C. internata* =*ampla* (Walk.); *C. signata*=*ramburii* (Schn.); *C. transversa*=? var. *collaris* (Schn.); *C. abbreviata* is not *abbreviata* ( ); *C. latipennis*=*ypsilon* (Fitch); *C. chlorophana*=*transmarina* (Hag.) as stated by Hagen; *C. occulta*

Ypsilon (Fitch); *C. marionella*, *aurifera*, and *lutea* belong to *Apochrysa*; *Hemerobius viridipennis* is the type of M'Lachlan's genus *Rapisma*, the character of which is corrected (*l. c.* p. 270); *H. phalænoides* and *binoculus* belong to *Drepaneptery.v*; *H. flavicornis*, *hamatus*, and *longicollis* to *Berotha*; *H. mimicus* and *cælivagus* to *Psychopsis* (Newm.); *H. hirtus* to *Megalomus*; *H. subanticus*, *variegatus*, and *posticus* to *Micromus*, the latter probably=*insipidus* (Hag.); *H. fuscus*=*subnebulosus* (Steph.); *H. pallidus* and *punctatus*=*micans* (Oliv.) [*H. nervosus* (Fab.) and *subnebulosus* (Steph.) are characterized *l. c.* p. 271]; *H. nebulosus* and *perelegans*=*limbatus* (Wesm.); *H. obscurus*, *lutescens*, *affinis*, *paganus*, and *apicalis*=*humuli* (Linn.); *H. crispus*, *stigma*, *obliteratus*, *pini*, and *fasciatus*=*limbatus* (Wesm.); *H. marshami*=*elegans* (Steph.); *H. longifrons* is characterized, *l. c.* p. 273; *H. fuscatus* and *confinis* =*Sisyra fuscata* (Fab.); *H. nitidulus*=*S. dalii* (M'L.); and *H. vicarius* is a *Sisyra*. *Dromophila montana* (Walk.) belongs to the Phryganeidæ and=♀ *Enoicyla pusilla* (Burm.).

Brauer (Verh. zool.-bot. Ges. in Wien, xvii. pp. 281–286) remarks that he was mistaken in identifying *Drepanicus* (Blanch.) with *Trichoscelia* (Westw.). He now regards it as a distinct genus, which he characterizes (*l. c.* p. 282), and which he considers to form the true transition from *Mantispa* towards *Hemerobius* and *Chrysopa*. To the genus as characterized Brauer refers *Mantispa biseriata* (Westw.) from Moreton Bay, *D. gayi* (Blanch.), and a supposed new species from Chili.

Brauer (Verh. zool.-bot. Ges. in Wien, xvii.) describes and figures the larvæ of *Hypochrysa nobilis* (Heyd.), *l. c.* p. 27, pl. 9. fig. 1, *Chrysopa pallida* (Schneid.), *l. c.* p. 29, pl. 9. fig. 2, and *Hemerobius humuli* (Linn.), *l. c.* p. 30.

Eaton (Ann. Mag. N. H. 3rd ser. xix. p. 395) notices examples of *Chrysopa vittata* and *phyllochroma* (Wesm.) with abnormities in the venation of the wings.

Mantispa pagana (Fab.)=*styriaca* (Poda) has been captured near Spandau. Stein in Berl. ent. Zeitschr. 1867, p. 397.

M'Lachlan notices the supposed ♀ of *Trichoscelia notha* (Westw.). Proc. Ent. Soc. 1867, p. xcix.

Nemoptera. De Sélys-Longchamps, in describing a new species of this genus from Asia Minor (Ann. Soc. Ent. Belg. x. pp. 253–255), refers to the characters of some of the allied species, and figures *N. barbara* (Klug), pl. 2. figs. 3 & 4, and *N. halterata* (Forsk.), pl. 2. figs. 5 & 6.

Ditaxis, g. n., M'Lachlan, Journ. Linn. Soc. ix. Zool. p. 262. Allied to *Mantispa*; wings broader, very obtuse; costa distant from subcosta up to the apex; costal area broader; gradate venules in two series. Sp. *Mant. bi-* Europe (Westw.).

Halesus nigr g. n., M'Lachlan, *l. c.* p. 266. Allied to *Osmylus*; first sector (M'Lachl.) radius, but approximated at apex, subcostal area with numerous *irrorate* venules. Sp. *O. strigatus* (Burm.).

Stenosmylus, g. n., M'Lachlan, *l. c.* p. 267. Allied to *Osmylus*; prothorax elongate, subcylindric; wings long and narrow, rounded or acute at apex, subcostal veinlets numerous, transverse veinlets in the disk very numerous, Sp. *O. tenuis* and *longipennis* (Walk.); *S. stenopterus*, sp. n., M'Lachl. *l. c.* p. 267, Australia.

New species:—

Mantispa. Westwood (Trans. Ent. Soc. 3rd ser. v.) describes the follow-

ing new species of this genus:—*M.* (*Trichoscelia*) *partheniella*, p. 501, *M.* (*T.*) *eurydella*, ibid., *M.* (*T.*) *bella*, p. 502, *M.* (*T.*) *egella*, ibid., *M.* (*T.*) *aquella*, p. 503, *M.* (*T.*) *iridella*, ibid., *M.* (*T.*) *basella*, p. 504, *M.* (*T.*) *fumatella*, ibid., *M. hagenella*, ibid., and *M. batesella*, p. 507, from the valley of the Amazons; *M.* (*T.*) *fasciatella*, p. 503, and *M. cognatella*, p. 506, Venezuela; *M. myrapetrella*, p. 505, South America, in the nest of *Myrapetra scutellaris*; *M. hamiltonella*, p. 506, East Indies; and *M. burmanella*, p. 507, Burmah.

Mantispa erythræa, Brauer, Verh. zool.-bot. Ges. in Wien, xvii. p. 506, Brisbane.

Trichoscelia latifascia, M'Lachlan, Journ. Linn. Soc. ix. Zool. p. 255, Ega.

Nemoptera imperatrix, Westwood, *l. c.* p. 507, West Africa.

Nemoptera ledereri, Sélys-Longchamps, Ann. Soc. Ent. Belg. x. p. 254, pl. 2. figs. 1 & 2, Asia Minor.

Hemerobius graeffei, Brauer, Verh. zool.-bot. Ges. in Wien, xvii. p. 507, pl. 14A. fig. 1, Samoa Islands.

Chrysopa. M'Lachlan (Journ. Linn. Soc. ix. Zool.) describes the following new species of this genus:—*C. cognata*, p. 249, Cambodia, China, Japan; *C. tripunctata*, p. 250, Australia; *C. nigriceps*, p. 251, Ega; *C. palliceps*, ibid., Ega; *C. gigantea*, p. 252, Natal; *C. rufostigma*, p. 253, Natal; and *C. clava*, p. 254, Ega.

Micromus navigatorum, Brauer, *l. c.* p. 508, Fiji and Navigators' Islands.

Drepanicus chrysopinus, Brauer, *l. c.* p. 284, Chili.

Myiodactylus armatus, M'Lachlan, *l. c.* p. 264, North Australia.

Coniopteryx detrita, M'Lachlan, Ent. M. Mag. iv. p. 151, Adelaide.

Rhaphidiidæ.

Rhaphidia. Hagen publishes (Trans. Ent. Soc. 3rd ser. v. pp. 493–499) some notes on the species of this genus. He records 18 species, 5 of which are characterized as new, and describes the following known species:—*R. schneideri* (Ratz.), *R. ophiopsis* (De G.), *R. media* (Burm.), *R. xanthostigma* (Schum.), *R. affinis* (Schn.), *R. hispanica*, *R. notata*, and *R. cognata* (Ramb). He remarks that in the form of the genital parts three types may be recognized, namely, those of:—

1. *R. ophiopsis*, varied and repeated in *xanthostigma*, *corsica*, *taurica*, *armeniaca*, and *notata*;

2. *R. cognata*, repeated in *bavarica*; and

3. *R. media*, repeated and varied in *affinis*, *cyprica*, *adnixa*, and *oblita*.

The species described are regarded by Hagen as undoubtedly distinct, with the exception perhaps of *R. schneideri*, which may = *cognata*. The apex of the abdomen in *R. ophiopsis* is figured p. 490. fig. 1, and the same parts of the head and stigma, in *R. xanthostigma* and *schneideri*, ibid. figs. 2–7. Zool. pp. burg has once found the larva of a *Raphidia* in a cocoon of *Lophyrus* rue of

Raphidia corsica, sp. n., Hagen, Trans. Ent. Soc. 3rd ser. v. p. 496; *taurica*, Hag. *l. c.* p. 497; *R. armeniaca*, Hag. ibid.; *R. bavarica*, Hag. ibid.; and *R. cyprica*, Hag. *l. c.* p. 498.

Sialidæ.

M'Lachlan (Journ. Linn. Soc. ix. Zool. pp. 259–261) publishes the following synonymic notes on the Sialidæ of Walker's Catalogue of Neuroptera. Walker's *Sialis ferrugineus* = *americana* (Ramb.); *Chauliodes fasciatus* = pro-

ably *C. lunatus* (Hag.); *Hermes*=*Neuromus* (Ramb.) and includes species *Chauliodes* and *Corydalis*; *H. maculatus*=*Chaul. serricornis* (Say); *H. rufilis*=*C. maculipennis* (Gray); *H. maculifera*=*C. maculipennis* ♀; *H. dubitatus*= ♀ *C. californicus* (Walk.); *H. indecisus*= ♀ *C. rastricornis* (Ramb.); *H. anticus*= ♀ *C. sinensis* (Walk.); *H. testaceus, hieroglyphicus, albipennis,* and *costalis* belong to *Corydalis*; *Raphidia varia* belongs to *Trichoscelia*. *Hermes sinensis* (Walk.) belongs to *Chauliodes*, and, as there is already a *C. sinensis*, M'Lachlan changes the name to *C. bowringii*. *Hermes prasinus* does not belong to the Sialidæ; it is the type of M'Lachlan's Perlide genus *Stenoperla*.

Corydalis cornutus. The larva of this species is described and figured in the Amer. Nat. i. p. 436, and the adult ♀ is figured, *l. c.* p. 437.

New species:—

Chauliodes pusillus, M'Lachlan, Journ. Linn. Soc. ix. Zool. p. 231, East Indies?; *C. japonicus*, M'Lachl. *l. c.* p. 232, Japan.

Corydalis batesii, M'Lachlan, *l. c.* p. 232, pl. 8. fig. 1, Ega; *C. crassicornis*, M'Lachl. *l. c.* p. 233, pl. 8. fig. 2, Texas; and *C. inamabilis*, M'Lachl. *l. c.* p. 235, pl. 8. fig. 3, Texas.

Panorpidæ.

Panorpa. M'Lachlan (Journ. Linn. Soc. ix. Zool. pp. 256–258) enumerates the species of this genus found in Japan, namely:—*P. japonica* (Thunb.), descr. p. 256; *P. leucoptera* (Uhler); a species indicated but not named by Hagen, with black wings spotted with white; and 2 new species.

Panorpa klugii, sp. n., M'Lachlan, Journ. Linn. Soc. ix. Zool. p. 256, and and *P. macrogaster*, sp. n., M'Lachl. *l. c.* p. 257, Japan.

Hagen remarks (Stett. ent. Zeit. 1867, p. 90) upon the species of *Panorpa* from Japan, especially those described by Uhler.

Eaton (Ann. Mag. N. H. 3rd ser. xix. pp. 395–398) describes and figures the distinctive characters presented by the apical segments of the abdomen in the males of the British species of *Panorpa*, viz. *P. communis, germanica,* and *cognata*.

Boreus hyemalis. The occurrence of this species near Croydon is recorded by Douglas, Ent. M. Mag. iv. p. 166. It was also taken at West Wickham by Scott, ibid.

Phryganeidæ.

M'Lachlan (Stett. ent. Zeit. 1867, pp. 50–63) remarks upon various European species of this group, including:—*Limnephilus pavidus* (Hag.); *Halesus nigricornis* (Brauer)=*auricollis* (Pict.), and probably *guttatipennis* (M'Lachl.); *H. flavipennis* (Pict.); *Apatania fimbriata* (Pict.); *Mormonia irrorata* (Curt.); *Philopotamus siculus* (Hag.); and *Rhyacophila venusta* (Pict.). Under *M. irrorata* (pp. 59–61) M'Lachlan remarks upon the habits and dwellings of that species, and of two others found in company with it. In the males of *Chætopteryx* the anterior tibiæ are destitute of spurs (p. 56). M'Lachlan also calls attention to the fact that the name *Diplectrona* (Westw.) has been misapplied by continental authors (p. 61).

M'Lachlan publishes (Ent. Ann. 1868, pp. 1–7) some notes on British Trichoptera, supplementary to his monograph of those insects. *Limnephilus*

nobilis (M'L.)=*decipiens* (Kol.); *L.* (*Chætotaulius*) *striola* (Kol.) is a British species; *Apatania vestita* (M'L.) is not *vestita* (Kol.), M'Lachlan names it *A. muliebris* (*l. c.* p. 4); *Mormonia* (*Helictomerus*) *basalis* (Kol.)=*Lasiocephala taurus* (Costa); *Mystacides ferruginea* (E. Pict.), probably=*Setodes reducta* (M'L.); *Hydropsyche fulvipes* (Curt.) is distinct from *angustipennis* (Curt.); *H. ophthalmica* (Ramb.) ♀ has small eyes.

Meyer (Stett. ent. Zeit. 1867, pp. 153–169) publishes an account of the species of this family found in Westphalia. He details his experience in rearing these insects from their larvæ, and mentions (*l. c.* p. 155) several instances of the copulation of the sexes of different species with production of fertile ova. The number of species enumerated is 45, of which 4 (2 *Polycentropus*, a *Mystacides*, and a *Setodes*) are undetermined, and have their distinctive characters briefly indicated. Most of the species were bred by the author from their larvæ, and he appends notes on the characters of the latter and of their cases.

C. S. Tomes (Quart. Journ. Micr. Sci. xv. pp. 248–251) describes the larva of a small Trichopterous insect, probably belonging to *Hydroptila*, found by him in a pond at Hampstead, inhabiting a silky case enveloped in an outer layer of concentrically arranged filaments of Conferva. The larva, with its case and details of its structure, is well figured, *l. c.* pl. 9.

A. E. Eaton indicates the means of identifying the pupæ and pupa-skins of insects of this group. Ann. & Mag. N. H. 3rd ser. xx. p. 384.

Eaton (Ann. & Mag. N. H. 3rd ser. xix. p. 398) notices some peculiarities in the venation of a ♀ *Anabolia nervosa* (Curt.) and the occurrence of *Silo fumipennis* (M'Lachl.) near Cambridge. He also describes the pupa-skin of *Brachycentrus subnubilus* (Curt.), and figures its mandibles and anal setæ (*l. c.* p. 399).

Neuronia clathrata (Kolen.) captured in Britain. M'Lachlan, Proc. Ent. Soc. 1867, p. cviii.

E. Gedge records an instance of renewed copulation in a pair of *Chætopteryx tuberculosa*. Ent. M. Mag. iii. p. 204.

Hydroptila. The habits of the larvæ of a species of this genus (*H. pulchricornis*?) are noticed by M'Lachlan. These larvæ remain suspended at midwater by a thread. Ent. M. Mag. iv. p. 17.

Limnephilus striola (Kolen.). A gynandromorphous specimen noticed by M'Lachlan. Proc. Ent. Soc. 1867, p. xcix.

M'Lachlan notices the occurrence of 2 species of *Stenophylax*, with an Ichneumon (*Paniscus*), in ice-caves in the Alps. Proc. Ent. Soc. 1865, p. 116.

New genera :—

Potamorites, g. n., M'Lachlan, Stett. ent. Zeit. 1867, p. 54. Allied to *Chætopteryx*; max. palpi smooth; ocelli present; anterior wings narrow, obliquely truncate at apex, sparsely clothed with hairs; calcaria 1, 2, 2. Sp. *P. biguttatus* (Pict.)=*Enoicyla limnophiloides* (Brauer); *E. frauenfeldii* (Brauer), &c.

Cryptothrix, g. n., M'Lachlan, *l. c.* p. 56. Allied to *Chætopteryx*; penultimate joint of max. palpi slightly dilated and truncate at apex; anterior wings long and narrow, obtusely rounded, with a very dense pubescence, radius a little inflexed at apex, discoidal cell long, closed; posterior wings

in ♂ with a deep median fold, beneath which the veins bear long hairs; calcaria 1, 2, 2. Sp. *Enoicyla nebulicola* (Hag.).

Bereodes, g. n., Eaton, Ann. & Mag. N. H. 3rd ser. xix. p. 400. Allied to *Berœa*; joints 2 & 4 of maxillary palpi equal, 5 longer, 3 shorter; joints 1 & 2 of antennæ much longer and stouter than the rest. Sp. *Silo minutus* (Kol.).

Aerophylax, g. n., Brauer, Verh. zool.-bot. Ges. in Wien, xvii. p. 742. Allied to *Chætopteryx*; spurs 0, 3, 4; antennæ stout, joint 1 shorter than head; joint 1 of labial palpi very small, 2 & 3 long and equal; anterior wings not widened to the end. Sp. *A. zerberus*, sp. n., Bauer, *l. c.* p. 743, Carpathians.

New species :—

Stenophylax montivagus, M'Lachlan, Stett. ent. Zeit. 1867, p. 50, and *S. difformis*, M'Lachl. *l. c.* p. 51, Carinthia.

Halesus adustus, M'Lachlan, *l. c.* p. 52, and *H. madidus*, M'Lachl. *l. c.* p. 53, Carinthia.

Apatania frigida, M'Lachlan, *l. c.* p. 57, Norwegian Lapland.

Rhyacophila glareosa, M'Lachlan, *l. c.* p. 62, Carinthia, Austria, and Bavaria.

Wormaldia nervosa, Brauer, Verh. zool.-bot. Ges. in Wien, xvii. p. 509, Fiji Islands (Oualou).

Hydromanicus ruficeps, Brauer, *l. c.* p. 510, pl. 14 A. fig 2, and *H. piceus* Brauer, *l. c.* p. 511, Fiji Islands (Oualou).

ORTHOPTERA.

A. *Separate Work.*

Wattenwyl, Charles Brunner de. Nouveau système des Blattaires. Vienna, 1865, 8vo, pp. xi and 426, with 13 plates.

In this valuable work Wattenwyl publishes a monograph of the difficult and little-studied family of the *Blattidæ*, in which, as he says, he describes about four times the number of species known to Serville and Burmeister. He describes in considerable detail the general characters of the family; and this description is followed by a most useful analysis of the works and memoirs cited, giving a list of the species described in each, with a statement of their equivalents in the author's system. In a supplementary notice at the end of the work, similar analyses of Saussure's recent memoirs on the *Blattidæ* are given, these having appeared whilst the descriptive portion of Wattenwyl's work was passing through the press.

B. *Papers published in Journals &c.*

* *Descriptive &c.*

Brauer, Friedrich. Beschreibung neuer exotischer Libellen aus den Gattungen *Neurothemis, Libellula, Diplax, Celi-*

themis und *Tramea*. Verhandl. zool.-bot. Gesellsch. in Wien, Band xvii. pp. 3–26.

Brauer, Friedrich. Bericht über die von Hrn. Dir. Kaup eingesendeten Odonaten. (Schluss.) Verhandl. zool.-bot. Gesellsch. in Wien, Band xvii. pp. 287–302.

The previous portions are published under the title of "Descriptions of New Exotic Libellulidæ" (see above and 'Record,' 1866, p. 522). This part contains descriptions of new species, and notes upon several others.

——. Ueber den Dimorphismus der Weibchen in der Libellulinen-Gattung *Neurothemis*. Verhandl. zool.-bot. Gesellsch. in Wien, Band xvii. pp. 971–976.

——. Neue Exotische Odonaten. Verhandl. zool.-bot. Gesellsch. in Wien, Band xvii. pp. 811–816.

Dohrn, H. . Versuch einer Monographie der Dermapteren. (Nachtrag.) Stettiner entom. Zeitung, 1867, pp. 341–343.

——. Neue und bisher nicht genügend bekannte Forficulinen. Ibid. pp. 343–349.

Eaton, A. E. (See "Neuroptera.")

Frauenfeld, G. von. (See "Insecta.")

Giebel, C. Die im zoologischen Museum der Universität Halle aufgestellten Epizoen, nebst Bemerkungen über dieselben. Zeitschrift für die ges. Naturwiss. Band xxviii. pp. 353–400 : December 1866.

A list, with remarks, of the Epizootic Insects, Acarina, and Crustacea contained in the Museum of the University of Halle, with descriptions of new species of Mallophaga.

Graber, Vitus. Die Orthopteren Tirols mit besonderer Rücksicht auf ihre Lebensweise und geographische Verbreitung. Verhandl. zool.-bot. Ges. in Wien, Band xvii. pp. 251–280 and 2 tables.

——. Analytische Uebersicht über die in Tirol beobachteten Orthopteren. Zeitschr. des Ferdinandeums &c., 3te Folge, Heft xiii. pp. 261–277.

An analytical table of the Tyrolese *Orthoptera genuina*.

Hagen, H. Revision der von Herrn Uhler beschriebenen Odonaten. Stettiner entom. Zeitung, 1867, pp. 87–95.

A synonymic notice of the species described by Uhler in the Proc. Acad. Nat. Sci. Phil. for 1857 and 1858.

——. Revision der von Herrn Scudder beschriebenen Odonaten. Stettiner entom. Zeitung, 1867, pp. 96–100.

——. Die Neuroptera der Insel Cuba. Stettiner entom. Zeitung, 1867, pp. 215–232.

This paper contains descriptions of Cuban Dragonflies, the colours given from Gundlach's descriptions of the living animals.

Hagen, H. Notizen beim Studium von Bráuer's Novara-Neuropteren. Verhandl. zool.-bot. Gesellsch. in Wien, Band xvii. pp. 31–62.

Notices of the species of *Æschnides* and *Corduliides* described by Brauer in the zoology of the 'Novara's' voyage.

Heer, Oswald. Ueber die fossilen Kakerlaken. Vierteljahrsschrift naturf. Gesellsch. in Zürich, Jahrg. ix. pp. 273–302, with a plate.

Jäckel, A. J. Ueber die Wander-, Zug- oder Strichheuschrecken (*Œdipoda migratoria*, L.) in Bayern. Corr.-Blatt zool.-min. Ver. Regensb. xxi. pp. 83–93.

Köppen, F. T. Ueber die Heuschrecken in Südrussland. Nebst einem Anhange über einige andere daselbst vorkommende schädliche Insekten. Horæ Soc. Ent. Ross. tom. iii. pp. 83–294.

M'Lachlan, R. A monograph of the British Psocidæ. Ent. Monthly Magazine, vol. iii. pp. 177–181, 194–197, 226–231, 241–245, and 270–276, plate 2.

Nitzsch, C. L. Die Federlinge der Sing-, Schrei-, Kletter- und Taubenvögel. Zeitschrift gesammt. Naturw. xxvii. pp. 115–122: 1866.

A posthumous paper, published by Giebel.

Packard, A. S. The Dragonfly. American Naturalist, vol. i. pp. 304–313, pl. 9.

Ritchie, A. S. Notes on the "Spectrum femoratum." Canadian Naturalist and Geologist, vol. iii. pp. 66–69.

Rudow, Ferd. Sechs neue Haarlinge. Zeitschrift gesammt. Naturwissenschaften, xxvii. pp. 109–112, Taf. 5–7: February 1866.

——. Characteristik neuer Federlinge. Ibid. pp. 465–477: June 1866.

Scudder, S. H. (See "Neuroptera.")

† *Anatomical and Physiological.*

Graber, Vitus. Zur Entwickelungsgeschichte und Reproductionsfähigkeit der Orthopteren. Sitzungsb. Akad. Wiss. Wien, Band lv. pp. 307–324, pls. 4: 1867. Abstract in Ann. & Mag. N. H. 3rd ser. xix. pp. 147–148.

On the developmental history and reproductive faculty of the Orthoptera (*Orth. genuina*).

Thysanura.

H. Lucas gives an abstract of Haliday's description of *Iapyx solifugus* (see 'Record,' 1864, p. 568). Bull. Soc. Ent. Fr. 1867, p. xx.

Lepisma saccharina. The characters and habits of this insect are noticed by Goureau (Insectes nuisibles, pp. 213–215).

G. S. Saunders notices the occurrence of insects of this family on melting snow in Yorkshire in March 1867. The species is doubtfully identified by Lubbock with *Podura* (*Anura*) *tuberculata* (Templ.). Proc. Ent. Soc. 1867, p. lxxxv.

Lepisma anophthalma, sp. n., Bilimek, Verh. zool.-bot. Ges. in Wien, xvii. p. 905, Mexico (Cave of Cacahuamilpa).

Mallophaga.

Goureau (Insectes nuisibles, pp. 207–213) describes the characters of the principal insects belonging to this group which infest domestic animals, and indicates their general habits.

Giebel notices the occurrence of a gigantic *Nirmus* on the Golden Eagle. Zeitschr. ges. Naturw. xxvi. p. 473.

Giebel has published (Zeitschr. für die ges. Naturw. xxviii. pp. 356–397) a list of the species of this group contained in the museum of the University of Halle. The majority of the specimens were accumulated by Nitzsch; and the remarks and descriptions interspersed in the list are chiefly derived from his MSS. The whole number of species is 437; but many of these have received no names. Many others are described as new.

Characters of the following new species are given by Giebel, chiefly from Nitzsch's MSS.:—*Docophorus leptomelas*, *l. c.* p. 358, on *Corvus albicollis*; *D. furcatus*, *l. c.* p. 359, on *Cyanocorax cristatellus*; *D. gilvus*, *l. c.* p. 360, on *Psittacus erithacus*; *D. integer*, ibid., on *Grus communis*; *D. sphenophorus*, *l. c.* p. 361, on *Platalea leucorodia*; *D. nitzschi*, ibid., on *Tringa pugnax* and *Totanus maculatus*; *D. bisignatus*, *l. c.* p. 362, on *Ibis falcinellus*; *D. pustulosus*, *l. c.* p. 363, on *Lestris parasitica*.

Nirmus leucocephalus, *l. c.* p. 365, on *Corvus albicollis*; *N. exiguus*, *l. c.* p. 366, on *Sylvia tithys*; *N. intermedius*, ibid., on *Turdus pilaris* and *torquatus*; *N. mundus*, ibid., on *Oriolus gallula*; *N. hecticus*, ibid., on *Sericulus regens*; *N. brasiliensis*, *l. c.* p. 367, on *Tanagra brasiliensis*; *N. majus*, ibid., on *Cassicus cristatus*; *N. subtilis*, ibid., on *Fringilla montana* and *domestica*; *N. ruficeps*, ibid., on *Fring. montana*; *N. densilimbus*, *l. c.* p. 368, on *Fringilla carduelis*; *N. delicatus*, ibid., on *Emberiza citrinella*; *N. cephaloxys*, ibid., on *Alcedo ispida*; *N. cephalotes*, *l. c.* p. 369, on *Buceros rhinoceros*; *N. melanophrys*, ibid., on *Upupa epops*; *N. superciliosus*, *l. c.* p. 370, on *Picus medius*; *N. quadrulatus*, ibid., on *Tetrao urogallus*; *N. anchoratus*, ibid., on *Penelope parraces*; *N. unicolor*, *l. c.* p. 371, on *Otis tarda*; *N. umbrina*, ibid., on *Scopus umbretta*; *N. funebrius*, ibid., on *Aramus gigas*; *N. ellipticus*, ibid., on *Glareola austriaca* and *orientalis*; *N. fuscus*, ibid., on *Charadrius alexandrinus*, *minor*, and *morinellus*; *N. hospes*, ibid., on *Vanellus squatarola*; *N. subcingulatus*, *l. c.* p. 372, on *Strepsilas interpres*; *N. ochropygos*, ibid. = *N. hæmatopi* (Denny); *N. semifissus*, ibid., and *N. hemichrous*, ibid., on *Himantopus rufipes*; *N. pileus*, *l. c.* p. 373, on *Recurvirostra avocetta*; *N. stictochrous*, *l. c.* p. 374, on *Dromas ardeola*; *N. similis*, ibid., on *Totanus glottis*; *N. fimbriatus*, ibid., on *Phalaropus fimbriatus*; *N. zonarius*, ibid., on *Numenius arquatus*, *Tringa minuta*, and

T. cinclus; *N. sacer*, *l. c.* p. 375, on *Ibis sacra*; *N. truncatus*, ibid.=*N. scolopacis* (Denny); *N. minutus*, ibid., on *Gallinula chloropus* and *Fulica atra*; *N. phæonotus*, ibid., on *Sterna fissipes*; *N. anagrapsus*, *l. c.* p. 376, on *Sterna leucoparcia*; *N. striolatus*, *l. c.* p. 377, on *Larus glaucus*; *N. triangulatus*, *l. c.* p. 378, on *Lestris crepidata*; *N. frontatus*, ibid., on *Eudytes arcticus* and *septentrionalis*; and *N. citrinus*, ibid., on *Alca torda*.

Lipeurus strepsiceros, *l. c.* p. 379, on *Psittacus erithacus*; *L. heterogrammicus*, ibid., on *Perdix cinerea*; *L. cinereus*, ibid., on *Perdix coturnix*; *L. mesopelios*, ibid., on *Phasianus pictus*; *L. heterographus*, *l. c.* p. 381, on *Gallus gallinaceus*; *L. angustissimus*, *l. c.* p. 382, on *Hemipodius pugnax*; *L. simillimus*, ibid., on *Palamedea chavaria*; *L. antilogus*, *l. c.* p. 383, on *Otis tetrax*; *L. maculatus*, ibid., on *Ciconia nigra*; *L. lepidus*, ibid., on *Anastomus coromandelicus*; *L. leucoproctus*, *l. c.* p. 384, on *Ardea purpurea*; *L. loculator*, ibid., on *Tantalus loculator*; *L. platalearum*, ibid., on *Plat. ajaja* and *leucorodia*; *L. subsignatus*, ibid., on *Phœnicopterus antiquorum*; *L. lineatis*, ibid., on *Tachydromus isabellinus*; *L. rhaphidius*, ibid., on *Ibis falcinellus*; *L. taurus*, *l. c.* p. 385, on *Diomedea exulans*; *L. serratus*, ibid., on *Anser albifrons*; *L. sordidus*, ibid., on *Anas crecca* and *clypeata*; *L. depuratus*, ibid., on *Anas strepera* and *penelope*; *L. angustolimbatus*, *l. c.* p. 386, on *Anas nigra*; *L. toxoceras*, ibid., on *Haliœus carbo*; *L. gyroceras*, ibid., on *Hal. brasiliensis*; *L. runcinatus*, ibid., on *Podiceps cristatus* and *minor*; *L. pullatus*, *l. c.* p. 387, on *Sula alba*; and *L. fœdus*, ibid., on *Psophia crepitans*.

Goniodes pusillus, *l. c.* p. 387, on *Perdix petrosa*; *G. isogenos* and *G. gregarius*, *l. c.* p. 388, on *Perdix afra*; *G. lipogonus*, ibid., on *Crypturus rufescens*; and *G. oniscus*, ibid., on *Crypt. tao*.

Goniocotes microthorax, *l. c.* p. 389, on *Perdix cinerea*.

Menopon sittæ, *l. c.* p. 390, on *Sitta europæa*; *M. incisum*, *l. c.* p. 391 (on *Coracias garrula*?); *M. phanerostigma*, ibid., on *Cuculus canorus*; *M. pallescens*, ibid.=*fulvomaculatum* (Denny); *M. ventrale*, ibid., on *Argus giganteus*; *M. phœostomum*, ibid., on *Pavo cristatus*; *M. stramineum*, ibid., on *Meleagris gallopavo*; *M. cracis*, ibid., on *Crax rubrirostris*; *M. micrandrum*, *l. c.* p. 392, on *Recurvirostra avocetta* and *Hæmatopus ostralegus*; *M. crocatum*, ibid., on *Numenius arquata*; *M. obtusum*, ibid., on *Larus tridactylus*; *M. phœopus*, ibid., on *L. ridibundus*; *M. eurygaster*, *l. c.* p. 393, on *Haliœus brasiliensis*; and *M. pustulosum*, ibid., on *Sula alba*.

Colpocephalum breve, *l. c.* p. 394, on *Dicholophus cristatus*; *C. macilentum*, ibid., on *Grus communis*; *C. cornutum*, *l. c.* p. 395, on *Tringa pugnax*; and *C. maurum*, on *Sterna fissipes* and *Larus tridactylus*.

Physostomum simile, *l. c.* p. 395, on *Sylvia succica*; *P. nitidissimum*, ibid., on *Emberiza citrinella*.

Giebel has published (Zeitschr. ges. Naturw. xxvii.) a paper by Nitzsch on the Mallophaga of the Song-birds, Clamatores, Scansores, and Pigeons. It contains diagnoses of the following species:—*Docophorus semisignatus*, p. 115, on the Raven; *D. argulus*, ibid., Raven; *D. subcrassipes*, p. 116, Magpie; *D. cruciatus*, ibid., on *Lanius collurio*; *D. ornatus*, ibid., Golden Oriole; *D. bifrons*, ibid, Bee-eater; *D. mystacinus*, ibid., on *Alcedo coromanda*; *Nirmus gracilis*, ibid., Martin; *N. quadrilineatus*, p. 117, on *Parus caudatus*; *N. gulosus*, ibid., Creeper; *N. cyclothorax*, ibid., on *Fring. montifringilla* and *montana*; *N. fenestratus*, ibid., Cuckoo; *N. latirostris*, ibid., Cuckoo; *N. candidus*, ibid., on *Picus canus* and *viridis*; *N. heteroscelis*, p. 118, on *Picus*

martius; *Lipeurus cinereus*, ibid., Martin; *L. strepsiceros*, ibid., on *Psittacus erithacus*; *L. baculus*, ibid., various Doves; *Goniodes compar*, ibid., Domestic Pigeon; *G. damicornis*, p. 119, on *Columba palumbus*; *Menopon anaspilum*, ibid., Raven; *M. mesoleucum*, ibid., on *Corvus cornix* and *corone*; *M. isostomum*, ibid., Rook; *M. anathorax*, p. 120, Jackdaw; *M. brunneum*, ibid., Nutcracker; *M. curysternum*, ibid., Magpie and Jackdaw; *M. indivisum*, ibid., Jay; *M. pusillum*, ibid., on *Motacilla alba*; *M. agile*, ibid., on *Sylvia tithys*; *M. exile*, p. 121, Wheatear; *M. cucullare*, ibid., on a white Starling; *M. fertile*, ibid., Hoopoe; *Physostomum agonum*, ibid., Redbreast; *P. sulphureum*, ibid., Golden Oriole; *P. frenatum*, ibid., Goldcrest.

Trinoton biguttatum, Rudow, Zeitschr. ges. Naturw. xxvii. p. 467, on *Tinnamus bannaguira*.

Colpocephalum. Rudow (*l. c.*) describes the following new species of this genus:—*C. numenii*, p. 469, on *Numenius linearis*; *C. vittatum*, ibid., on *Ardea ralloides*; *C. unicolor*, p. 470, on *Carpophaga samoensis*; *C. cornutum*, ibid., on *Balearica pavonina*; *C. scalariforme*, p. 471, on *Tantalus loculator*; *C. cinctum*, p. 472, on *Procellaria glacialoides*; *C. flavum*, ibid., on *Carduelis granadensis*; *C. furcatum*, p. 473, on *Procellaria mollis*; *C. commune*, p. 474, on *Neomorphus cultridens*; *C. hirtum*, ibid., on *Buceros ruficollis*; *C. semicinctum*, p. 475, on *Corvus scapulatus*; *C. impressum*, ibid., on *Aquila fulva*; *C. minutum*, p. 476, on *Cygnus musicus*.

Lipeurus ferox, Giebel, Zeitschr. ges. Naturw. xxix. pp. 195–196, from *Diomedea melanophrys* (3½ lines in length).

Trichodectes. Rudow (Zeitschr. ges. Naturw. xxvii.) describes the following as new species of this genus:—*T. mexicanus*, p. 109, pl. 5. fig. 1, on *Cercolabes mexicanus*; *T. breviceps*, p. 110, pl. 5. fig. 2, on *Auchenia llama*; *T. longiceps*, p. 110, pl. 6. fig. 1, on *Antilope arabica*; *T. mambricus*, p. 111, pl. 6. fig. 2, on *Hircus mambricus*, from West Africa; *T. crassipes*, ibid., pl. 7. fig. 1, on the Angora Goat; and *T. solidus*, p. 112, pl. 7. fig. 2, on a Goat from Guinea.

Ornithobius rostratus, Rudow, Zeitschr. ges. Naturw. xxvii. p. 465, on *Chenalopex ægyptiacus*.

Trabeculus, g. n., Rudow, Zeitschr. ges. Naturw. xxvii. p. 466. Allied to *Docophorus*; joint 2 of antennæ in ♂ produced into a hook, 3–5 set on at right angles; trabeculæ in both sexes. Sp. *T. schillingi*, sp. n., Rudow, *l. c.* p. 467, on *Procellaria mollis*.

Thysanoptera.

Heliothrips hæmorrhoidalis (Bouché). F. Löw records the occurrence of this species in great abundance, and in all stages, in winter on plants of *Viburnum tinus* in his room. Verh. zool.-bot. Ges. in Wien, xvii. p. 747.

Frauenfeld notices (Verh. zool.-bot. Ges. in Wien, xvii. p. 800) the occurrence of various forms of this group in hothouses, and gives a list of plants observed by Benseler to be particularly subject to their attacks in the Botanic Garden of Vienna. He also describes a new species.

Thrips benseleri, sp. n., Frauenfeld, *l. c.* p. 800, on *Zea mais* in Vienna.

Pseudo-Neuroptera.

Termitidæ.

Fritsch (Berl. ent. Zeitschr. 1867, pp. 254–259) has some remarks on the habits of the South-African Termites and the construction of their nests.

Gourreau (Insectes nuisibles, pp. 70–74) describes the European species of this family (*Termes flavicollis*, Fab., and *lucifugus*, Rossi) and their habits.

Psocidæ.

M'Lachlan publishes (Ent. M. Mag. iii.) a monographic revision of the British species of *Psocidæ*, of which he enumerates 29. He divides the family (p. 179) into the well-known groups *Atropina* and *Psocina*, and in the former includes the 3 genera *Atropos*, *Clothilla*, and *Psoquilla* (tabulated p. 180). *Atropos* includes only *A. divinatoria* (Müll.), figured pl. 2. fig. 1, as to the ticking-powers of which McLachlan expresses great doubt (p. 181). *Clothilla* (Westw.)=*Lepinotus* (Heyd.) includes 3 British species, namely, *C. pulsatoria* (Linn.), *C. inquilina* (Heyd.), and *C. picea* (Motsch.). *C. pulsatoria* and *C. picea* are figured (pl. 2. figs. 2 & 3). Of *Psoquilla* (Hag.) the only species is *P. marginepunctata* (Hag.), which is figured (pl. 2. fig. 4). The date of the establishment of this genus is said to be 1866 instead of 1865. With regard to *Lachesilla* (Westw.), M'Lachlan states (p. 196) that, from an examination of the type specimens of *L. fatidica*, he is inclined to regard the genus as founded in error. One of the specimens appears to be the larva of one of the *Psocina*, the other possesses ocelli and small but distinctly reticulated wings, and appears to be a micropterous form of *Cæcilius pedicularius*.

The genera of *Psocina* represented in Britain are five in number, namely, *Psocus* (Lat.), *Cæcilius* (Curt.), *Peripsocus* (Hag.), *Stenopsocus* (Hag.), and *Elipsocus* (Hag.). These are tabulated on pp. 228–229. Of *Psocus* M'Lachlan (pp. 229–231 & 241–244) enumerates 10 British species, namely, *P. longicornis* (Fab.), *nebulosus* (Steph.), *variegatus* (Fab.), *fasciatus* (Fab.), figured pl. 2. fig. 5, *sexpunctatus* (Linn.), *bifasciatus* (Latr.), *quadrimaculatus* (Latr.), *subnebulosus* (Steph.), *bipunctatus* (Linn.), and *morio* (Latr.). *Stenopsocus* (pp. 244–246) includes *S. immaculatus* (Steph.), *nervosus* (Steph.), and *cruciatus* (Linn.). Of the last a small-winged form is figured (pl. 2. fig. 7). Of *Cæcilius* (pp. 270–273) we have 5 British species, namely, *C. pedicularius* (Linn.), *flavidus* (Steph.), *obsoletus* (Steph.), *fuscopterus* (Latr.), and 1 new species. *Peripsocus* (p. 273) includes *P. alboguttatus* (Dalm.), figured pl. 2. fig. 8, and *P. phæopterus* (Steph.). Of *Elipsocus* (pp. 274–276), besides a new species, we have *E. unipunctatus* (Müll.), *hyalinus* (Steph.), and *flaviceps* (Steph.), the last figured (pl. 2. figs. 9, 10). Besides the species above mentioned, M'Lachlan figures the fore wings of *Psocus*, *Stenopsocus*, *Cæcilius*, and *Peripsocus* on an enlarged scale (pl. 2. figs. 11–14), and the tarsi of *Psocus* and *Elipsocus* (figs. 15, 16).

Atropos pulsatorius. A discussion on the question whether this insect really produces a ticking noise appears in Proc. Ent. Soc. 1867, pp. lxxiii–lxxiv.

J. Blackwall mentions that, a ticking sound having been heard in a work-box, its compartments were all carefully examined, when a single specimen of *Atropos* (*divinatoria*) was found in the bran of a pincushion. No sound was afterwards heard from the box. M'Lachlan states that he has since been informed of a similar case. Ent. M. Mag. iv. pp. 19–20.

Psocus rufus (Walsh) bred by Walsh from gall *Salicis brassicoidis*. Proc. Ent. Soc. Phil. vi. p. 270.

Cæcilius dalii, sp. n., M'Lachlan, Ent. M. Mag. iii. p. 272, pl. 2. fig. 6, Dorsetshire (on Box).

Elipsocus westwoodii, sp. n., M'Lachlan, *l. c.* p. 274 (=*Psocus 4-maculatus*, Westw. nec Latr.).

Libellulidæ.

Landois (Zeitschr. für wiss. Zool. xvii. pp. 167–169) notices a peculiar sound-producing organ in the *Libellulidæ*, and figures that of *Æschna juncea* (pl. 11. fig. 20). It is situated in the prothoracic stigmata, which are placed quite at the front of the thorax, and concealed by the head. These stigmata are large elongated slits, one margin of which is simple, whilst the other bears a sort of chitinous comb of about 20 teeth, between which an exceedingly delicate membrane is extended. The metathoracic stigmata, which in general are the chief organs of sound in this part of the body, are smaller, and bear on one side a semilunar valve with stiff hairs.

A. S. Packard gives a general account of the natural history of the insects of this family, with especial reference to North-American species (Amer. Nat. i. pp. 304–313). He figures the lower surface of the head (p. 307. fig. 1) and the extremity of the abdomen (p. 308. fig. 2) of the larva and the pupa of *Æschna* and *Diplax* (p. 309. fig. 3 & p. 311. fig. 4), and refers to and figures the following species (*l. c.* pl. 9):—*Libellula trimaculata* (De G.), fig. 1; *L. quadrimaculata*, fig. 2; *Diplax berenice* (Drury), figs. 3 & 4; *D. elisa* (Hag.), fig. 5; *Nannophya bella* (Uhler), fig. 6; and *Agrion saucium* (fig. 7).

Neurothemis. Brauer proposes this name for the genus *Polyneura* (Ramb.), the latter name being preoccupied in Rhynchota (Verh. zool.-bot. Ges. in Wien, xvii. p. 6). He gives a list of the species referred by him to the genus (*l. c.* pp. 7–8), several of which are new; but this is modified by the suppression of some of his new species in a subsequent paper on the occurrence of dimorphism in the females of some of the species.

Brauer (Verh. zool.-bot. Ges. in Wien, xvii. pp. 971–976), indicates the occurrence of dimorphism in the females of some species of the genus *Neurothemis* (=*Polyneura*, Ramb.), some of them having the wings very richly veined, as in the males, whilst others have widely netted wings like those of the ordinary *Libellulæ*. He mentions that a similar dimorphism occurs in the genus *Ischnura*. He explains the phenomenon, on Darwinian principles, by the supposition that the close netting of the veins is a secondary sexual character in the males, so that the heteromorphous females are the normal form, and the isomorphous ones (which are less numerous in the collections) females with male habit. He indicates the species which he refers to the genus as follows, some of them having been described in an earlier paper, as indicated below:—1. *N. gigantea* (Br.); 2. *N. sophronia* (Dr.)=*fulvia* (Dr., Burm.); 3. *N. palliata* (Ramb.), incl. *ramburii* (Kaup, Br.), *ceylanica* (Br.), and *decora* (Br.); 4. *N. elegans* (Guér.)=? *manadensis* (Boisd.); 5. *N. pseudosophronia* (Br.), incl. *diplax* and *innominata* (Br.), and *oculata* and *stigmatizans* (Fab.), the species will therefore bear the name of *N. oculata* (Fab.); 6. *N. fluctuans* (Burm.)=*apicalis* (Ramb.); 7. *N. nicobarica* (Br.); 8. *N. equestris* (Fab.); 9. *N. feralis* (Burm.); 10. *N. oligoneura*, sp. n.

Hagen has submitted some species of this family, described in 1857 and 1858 by Uhler, to a synonymic revision (Stett. ent. Zeit. 1867, pp. 87–96), founded chiefly upon types sent to him by that author. The species noticed are:—*Libellula speciosa* (Uhl.)=*L. albistyla* (Sélys), which is identical

with *L. cancellata* (Vill.), and includes *L. obnixa* (Hag.) and *albicauda* (Brauer); *L. cancellata* (Müll.) = *scotica*; *L. phalerata* (Uhl.) = *trivialis* (Ramb.); *L. sabina* (Drury); *Cordulia viridiænea* (Uhl.); *Mnais pruinosa* (Uhl.)=*strigata* (Hag.); *Nannophya bella* (Uhl.); *Libellula bistigma* (Uhl.) =*quadrupla* (Say); *L. plumbea* (Uhl.); *L. confusa* (Uhl.) = *pulchella* (Drury); *L. saturata* (Uhl.); *L. julia* (Uhl.); *L. assimilata* (Uhl.). The described species of the genus *Nannophya* are cited by Hagen (*l. c.* pp. 90–91), and are *N. bella* (Uhl.), *maculosa* (Hag.), *prodita* (Hag.) ♂ =*inermis* (Sélys), *semiaurea* (Mus. Berol.), *phryne* (Perty)=*apicalis* (Hag.), *australis* (Brauer), *pygmæa* (Ramb.), and *exigua* (Ramb.).

Hagen publishes (Stett. ent. Zeit. 1867, pp. 96–100) some notes on the species of this family from the Isle of Pines and the White Mountains, described by Scudder in 1866 (see 'Record,' 1866, p. 523). The synonymic results are as follows:—*Agrion maria* (Sc.) = *Neoneura palustris* (Hag.); *Macromia cubensis* (Sc.)=*Erythemis longipes* (Hag.); *Tramea insularis*=*abdominalis* (Ramb.); *Libellula vinosa* (Sc.) = *Dythemis rufinerva* (Burm.); *Mesothemis poeyi* (Sc.)=*D. dicrota* (Hag.); *M. gundlachii* (Sc.)=*simplicicollis* (Say); *Perithemis domitia*=*metella* (Sélys). These species are from the Isle of Pines. On the species from the White Mountains, Hagen remarks that *Cordulegaster lateralis* (Sc.) may perhaps be identical with *C. sayi*; *Cordulia eremita* (Sc.) probably=*albicincta* (Burm.); *C. forcipata* (Sc.) probably=*C. arctica*; and *C. shurtleffii* (Sc.)=*bifurcata* (Sélys). Hagen also communicates a note on the Odonata observed by Uhler in St. Domingo (*l. c.* p. 99).

Hagen (Stett. ent. Zeit. 1867, pp. 215–232) gives an account of some dragonflies sent from Cuba by Gundlach and Poey, and describes their colours when living from the statements of the former. The known species are:—*Pantala flavescens* (Fab.), *P. hymenæa* (Say), *Tramea carolina* (Linn.), *T. onusta* (Hag.), *T. abdominalis* (Ramb.), *T. insularis* (Hag.), *T. marcella* (Sélys), *T. simplex* (Ramb. *lithemis eponina* (Drury). Hagen also refers particularly to the species hitherto referred to *Celithemis*.

Hagen publishes (Verh. zool.-bot. Ges. in Wien, xvii. pp. 31–62) a series of notes on the species of *Æschnides* and *Corduliides* cited by Brauer in the zoology of the voyage of the 'Novara.' The species referred to are:—*Anax ephippiger* (Burm.)=*mediterraneus* (Sélys) and *senegalensis* (Ramb.), and its geographical distribution; *A. jaspideus* (Burm.), ♀ descr.; *A. papuensis* (Burm.)=*congener* (Ramb.); *A. junius* (Drury)=*spiniferus* (Ramb.); *A. longipes* (Hag.), descr.; *A. dorsalis* (Burm.), ♀ descr.; *A. amazili* (Burm.) =*maculatus* (Ramb.), ♂ descr. and geogr. distr. noticed; *A. concolor* (Br.); *A. guttatus* (Burm.)=*magnus* (Ramb.), ♂ ♀ descr.; *A. gibbosulus* (Ramb.); *A. formosus* (Van der Lind.), geogr. distrib. and variation; *A. parthenope* (Sélys); *A. julius* (Br.); *Æschna tahitensis* (Br.), also from Sumatra; *Æ. cornigera* (Br.); *Æ. macromia* (Br.); *Æ. excisa* (Br.)=*luteipennis* (Burm.); *Æ. castor* (Br.), ♀ descr.; *Staurophlebia magnifica* (Br.)=*reticulata* (Burm.) =*gigas* (Ramb.); *Æschna ampla* (Ramb.), additional characters; *Gynacantha idæ* (Br.); *Epopthalmia vittata* (Burm.), ♂ descr.; *E. elegans* (Br.); and *Cordulia novæ-zealandiæ* (Br.)=probably *C. smithii* (White). Hagen also remarks (*l. c.* p. 54) upon the genera *Megalæschna* and *Neuræschna* (Sélys), and describes *N. costalis* (Burm.).

Giraud remarks (Bull. Soc. Ent. Fr. 1867, p. xiii) upon the changes of

colour which occur in certain insects with age, and especially notices the males of *Libellula* and of *Calepteryx virgo*.

M'Lachlan notices a partially andromorphous ♀ of *Calepteryx splendens*. Proc. Ent. Soc. 1865, p. 125.

Tholymis, g. n., Hagen, Stett. ent. Zeit. 1867, p. 221. Allied to *Pantala*; eyes widely in contact; posterior lobe of prothorax small, entire; abdomen conical; segments 2–4 with a transverse suture; legs long, very slender; posterior wings dilated at base; pterostigma small, trapezoidal; triangle of anterior wings long, narrow; appendages long. Sp. *T. citrina*, sp. n., Hagen, *l. c.* p. 218, Cuba.

New species :—

Anax strenuus, Hagen, Verh. zool.-bot. Ges. in Wien, xvii. p. 34, Oahu; *A. tristis*, Hagen, *l. c.* p. 35, Guinea; *A. panybeus*, Hagen, *l. c.* p. 42, Celebes; *A. fumosus*, Hagen, *l. c.* p. 43, Ternate; *A. speratus*, Hagen, *l. c.* p. 46, Cape of Good Hope; *A. bacchus*, Hagen, *l. c.* p. 48, Himalaya.

Æschna januaria, Hagen, *l. c.* p. 51, Brazil.

Neurothemis. Brauer (*l. c.*) describes the following as new species of this genus (*vide suprà*) :—*N. gigantea*, p. 8, Amboyna; *N. ceylanica*, p. 11, Ceylon; *N. nicobarica*, p. 12, Karnicobar and Singapore; *N. incerta*, ibid., Celebes; *N. pseudosophronia*, p. 15, Ceram, China ?; *N. innominata*, p. 17, New Guinea, Ceram; and *N. diplax*, p. 18, New Guinea, Ceram.

Neurothemis oligoneura, Brauer, *l. c.* p. 976, Cape York.

Libellula pectoralis (Kaup, MS.), Brauer, *l. c.* p. 19, Ceram.

Diplax cora (Kaup, MS.), Brauer, *l. c.* p. 20, Ceram.

Diplax thoracantha, Brauer, *l. c.* p. 299, Ceram; *D. denticauda*, Brauer, *l. c.* p. 301, New Guinea.

Tramea cophysa (Koll. MS.), Hagen, Stett. ent. Zeit. 1867, p. 226, Brazil; *T. australis*, Hagen, *l. c.* p. 229, Cuba (of which *T. iphigenia*, Hag. *l. c.* p. 230, from Bogotá, is probably the ♂).

Tramea subbinotata, Brauer, Verh. zool.-bot. Ges. in Wien, xvii. p. 811, *T. longicauda*, Brauer, *l. c.* p. 812, *T. brasiliana*, Brauer, ibid., from Brazil; *T. crocea*, Brauer, *l. c.* p. 813, Philippine Islands; *T. africana*, Brauer, *l. c.* p. 814, Sierra Leone; and *T. erythræa*, Brauer, ibid., Mauritius.

Tramea transmarina, Brauer, *l. c.* p. 21, Fiji Islands; *T. samoensis*, Brauer, *l. c.* p. 22, Navigator's Islands.

Celithemis regia, Brauer, *l. c.* p. 24, Amboyna; *C. chalcoptilon*, Brauer, *l. c.* p. 25, Navigator's Islands.

Celithemis pygmæa, Brauer, *l. c.* p. 297, New Guinea.

Agrionoptera quatuornotata, Brauer, *l. c.* p. 298, Menado.

Neurobasis kaupi, Brauer, *l. c.* p. 293, Celebes.

Gynacantha rosenbergi (Kaup, MS.), Brauer, *l. c.* p. 295, New Guinea.

Rhyothemis dispar, Brauer, *l. c.* p. 815, Fiji Islands.

Ephemeridæ.

Eaton (Ann. & Mag. N. H. 3rd ser. xix. p. 401) notices specimens of *Cloëopsis diptera* in which the costal area is traversed towards the apex by irregular veins. These specimens present some other peculiarities, and may prove to belong to a distinct species.

Orthoptera genuina.

Landois (Zeitschr. für wiss. Zool. xvii. pp. 111–123) describes the various modes by which sound is produced by the insects of this order. In all cases friction is the cause of the sound. Many species produce a rattling noise during flight, due to the rubbing of the wings upon the tegmina. In the Acrydiidæ (pl. 10. figs. 1 & 2, *Stenobothrus*) the hinder femora show two lines on the lower part of their inner surface, the uppermost of which is the largest, and bears a row of minute teeth of peculiar form. The number of these teeth varies even in the same individual. It is by the rapid passage of these teeth over the projecting veins of the tegmina that the latter are set in vibration, and produce the characteristic sound emitted by these insects. The crickets (*Gryllidæ* or *Achetidæ*), as is well known, produce their sounds by rubbing the tegmina one upon the other. In each of the tegmina there is a vein near the base, which is furnished with numerous fine cross pieces, placed on the lower side in one of the tegmina and on the upper surface in the other (pl. 10. figs. 3, 4 in *Gryllus campestris*, fig. 5 in *Gryllus domesticus*). By the rapid passage of these parts over one another the sound is produced. The sound-producing organs of the *Locustidæ* are likewise in the tegmina, and consist, as in the crickets, of single elevated veins with numerous cross pieces.

Fritsch (Berl. ent. Zeitschr. 1867, pp. 260–266) notices some of the principal forms of this group observed by him in South Africa. *Pneumora* does not appear every year, but only from time to time; its favourite resorts are potato-fields. The locust (*Gryllus devastator*, Licht.) is also particularly noticed.

Graber has published (Zeitschr. des Ferdinand. 3^te^ Folge, xiii. pp. 261–277) an analytical synopsis of the true Orthoptera known to occur in the Tyrol. The total number of species is 75, namely, *Forficulidæ* 6, *Mantidæ* 1, *Blattidæ* 5, *Gryllidæ* 7, *Locustidæ* 22, and *Acrydiidæ* 34.

Graber has also published (Verh. zool.-bot. Ges. in Wien, xvii. pp. 251–280) a valuable memoir on the true Orthoptera of the Tyrol, indicating the species found in that country, and their geographical and especially their altitudinal distribution, and in many cases touching briefly upon their habits. The total number of species here recorded is 81. The general results of the investigation are admirably summed up in two tables appended to the conclusion of the paper.

Frauenfeld (Verh. zool.-bot. Ges. in Wien, xvii. pp. 430 & 442–445) notices various species of this order which were captured on board the 'Novara.' Several species of Blattidæ, including even the European *Phyllodromia germanica*, lived on board, and the author gives some interesting particulars as to their habits.

Forficulidæ.

H. Dohrn states (Stett. ent. Zeit. 1867, p. 341) that in his monographic revision of this family the genus *Chelidura* was unfortunately omitted, his absence at the time when it was printed preventing his correcting the proofs.

He now gives the characters of the genus, and cites the following species as belonging to it:—*C. aptera* (Charp.), incl. *dilatata* and *simplex* (Lafr.) and *alpina* (Bon.); *C. dufouri* (Serv.); *C. paupercula* (Géné); and *C. acanthopygia* (Géné). *Chelidura anthracina* (Kolen.) is the larva of *F. biguttata* (Fab.).

Dohrn also gives some additional characters of his *Pygidicrana ophthalmica* (*l. c.* p. 344), indicates some characters of Stål's *F. parvicollis* (referred to *Psalidophora*), and fully describes *F. ochropus* (Stål), which he places in the genus *Labia* (*l. c.* p. 345).

Stone ascribes the destruction of wasps partially to an abundance of earwigs, and Westwood thinks that they may also be injurious to bees. Proc. Ent. Soc. 1865, pp. 113–114.

Weir & Westwood discuss the use of the caudal appendages in the earwigs. Proc. Ent. Soc. 1865, pp. 116–117.

Perty (Mitth. naturf. Ges. in Bern, 1867, p. 309) notices an example of *Forficula auricularia* having the right half of the forceps ♂, the left ♀.

Lucas has obtained a long yellow worm, probably a *Mermis*, from specimens of *Forficula auricularia* which had the abdomen much swelled. The worms issued between the first and second abdominal segments on the dorsal surface. Bull. Soc. Ent. Fr. 1866, p. lviii.

Platylabia, g. n., Dohrn, Stett. ent. Zeit. 1867, p. 347. Habit of *Sparatta*; antennæ of *Labia*; segments 1 & 2 of abdomen without tubercles. Sp. n. *P. major*, Dohrn, *l. c.* p. 347, Celebes; *P. thoracica*, Dohrn, *l. c.* p. 348, Penang and Ceylon; *P. dimidiata*, Dohrn, ibid., Luzon; and *P. guineensis*, Dohrn, ibid., Prince's Island.

New species:—

Pygidicrana caffra, Dohrn, Stett. ent. Zeit. 1867, p. 343, Caffraria; *P. valida*, Dohrn, *l. c.* p. 344, Burmah.

Forcinella hottentotta, Dohrn, *l. c.* p. 344, Caffraria.

Psalidophora stigma, Dohrn, *l. c.* p. 345, Venezuela.

Labia quadrilobata, Dohrn, *l. c.* p. 346, Prince's Island.

Blattidæ.

Goureau (Insectes nuisibles, pp. 60–64) describes the natural history of the species of this family, which inhabit houses in Europe, especially *B. americana* and *orientalis*. He describes the general characters of *B. germanica*, *livida*, and *lapponica*, which, he says, live in our woods, but never in the interior of houses. This, however, is incorrect.

Polyphaga mexicana (Burm.) occurs in the Mexican cave of Cacahuamilpa, according to Bilimek, Verh. zool.-bot. Ges. in Wien, xvii. p. 904.

O. Heer has published (Vierteljarsschr. naturf. Ges. in Zürich, ix. pp. 273–302) a list of the fossil species of this family, with descriptions of new species.

Brunner von Wattenwyl (Nouveau système des Blattaires) divides this family into the following subfamilies:—

I. Femora spinose.

A. Last ventral segment in ♀ ample, flat, with no subgenital lamina.

1. Supraanal lamina very narrow, transverse; wings with a triangular apical field ..... Ectobidæ.

2. Supraanal lamina produced, triangular, incised or lobed; wings with no apical field.

* Supraanal lamina triangular; cerci more than twice its length. PHYLLODROMIDÆ.

† Supraanal lamina more or less quadrate (♂), incised with rounded lobes, or entire, broad and rounded (♀); cerci scarcely longer than lamina ..... EPILAMPRIDÆ.

B. Last ventral segment in ♀ with valves ..... PERIPLANETIDÆ.

II. Femora not spinose.

A. Claws with an arolius.

1. Anterior part of wings acuminate, or furnished with a triangular, folded apical field ..... CHORISONEURIDÆ.

2. Anterior part of wings rounded, apical field 0.

* Anal field of wings fan-like.

a. Supraanal lamina in ♀ quadrate; posterior angles of abdominal segments produced ..... PANCHLORIDÆ.

b. Supraanal lamina in ♀ rounded ..... PERISPHÆRIDÆ.

† Anal field of wings not folded.

a. Supraanal lamina in ♀ rounded ..... CORYDIDÆ.

b. Supraanal lamina in ♀ quadrate, incised in middle. HETEROGAMIDÆ.

B. Arolius 0.

1. Supraanal lamina quadrate, incised ..... BLABERIDÆ.

2. Supraanal lamina transverse, rounded, entire .. PANESTHIDÆ.

The ECTOBIDÆ include the following genera :—

Ectobia (Westw.), type *E. lapponica* (Linn.), figured with details, pl. 1. fig. 1, and 7 other species, 1 new, *E. lucida* (*l. c.* p. 62), from New Holland ?, which forms the type of a subgenus, *Theganopteryx*.

Anaplecta (Burm.), with 7 species, 1 new, *A. bivittata* (*l. c.* p. 63), from Brazil; *A. lateralis* (Burm.), figured, with wings, pl. 1. fig. 2. And

Aphlebia, g. n., *l. c.* p. 66, with corneous elytra and rudimentary wings; 8 species; type *A. punctata* (Charp.), pl. 1. fig. 3, with details of both sexes; n. sp. *A. infumata*, *l. c.* p. 68 = *Blatta ericetorum* (Woll.) = ? *adusta* (Motsch.).

To the PHYLLODROMIDÆ are referred :—

Ceratinoptera, g. n., *l. c.* p. 75, with corneous elytra and perfect wings, and the inferior genital plate in ♂ furnished with styles; known sp. *diaphana* (Fab.), *poeyi* and *porcellana* (Sauss.); new sp. *C. picta*, p. 76, pl. 1. fig. 4, and *C. castanea*, p. 77, from Brazil, and *C. peruviana*, p. 78.

Loboptera, g. n., p. 79, with squamiform corneous elytra and no wings; 4 species; type *L. decipens* (Germ.), pl. 2. fig. 5; new sp. *L. indica*, p. 82.

Temnopteryx, g. n., p. 83, with abbreviated corneous elytra and rudimentary wings; 6 species, 5 new; *T. capensis*, p. 84, pl. 2. fig. 6, and *T. inconspicua*, p. 85, Cape; *T. fulva*, p. 85, Java; *T. virginica*, p. 86, and *T. deropeltiformis*, p. 87, North America.

Phyllodromia (Serv.), 33 species, 15 new; figured *P. germanica* (Linn.), pl. 2. fig. 7, and *P. vitrea*, sp. n., pl. 2. fig. 8.

Pseudophyllodromia, g. n., p. 111, pronotum leaving the top of the broad head exposed; sp. *P. ornata*, sp. n., p. 112, pl. 3. fig. 9, Philippine Islands.

Apolyta, g. n., p. 112, resembling *Thrysocera*; median vein of elytra flex-

uous; pronotum transverse, leaving the scutellum free; sp. *A. vestita* (Burm.) and *A. pellucida*, sp. n., p. 114, pl. 3. fig. 10, Sydney.

Thrysocera (Burm.), with 21 species, 4 new *T. histrio*—(Burm.) and a new sp., *T. pruinosa*, p. 117, forming a subgenus, *Pachnepteryx*; figured *T. oblongata* (Linn.), pl. 3. fig. 11.

Ischnoptera (Burm.), with 26 species, 10 new; figured *I. brasiliensis*, sp. n., p. 130, pl. 3. fig. 12, and *I. rufa*, sp. n., p. 131, pl. 3. fig. 13, from Brazil. And

Nyctibora (Burm.), with 6 species; figured *N. sericea* (Burm.), pl. 3. fig. 14.

The Epilampridæ include:—

Paratropa (Serv.), with 6 species, 1 new, namely, *P. mexicana*, p. 151, pl. 4. fig. 15.

Phoraspis (Serv.), with 9 species, 1 new, *P. modesta*, p. 161, from Brazil; figured *P. picta* (Drury), pl. 4. fig. 16, and the wing of *P. cassidea* (Burm.), pl. 4. fig. 17.

Paraphoraspis, g. n., p. 163, with distinct veins in the elytra and the pronotum truncated behind, containing *P. pallens* (Serv.) and *P. notata*, sp. n., p. 164, pl. 4. fig. 18, from Australia and Ceylon.

Epilampra (Burm.), with 31 species, 20 new; figured *E. nebulosa* (Burm.), pl. 4. fig. 19, and *E. gracilis*, sp. n., pl. 4. fig. 20, from New South Wales and Tasmania.

Homalopteryx, g. n., p. 195; branches of inframedian vein of wings furcate, not parallel; sp. *H. macassariensis* (De Haan) and *H. capucina*, sp. n., p. 196, pl. 5. fig. 21, Venezuela. And

Opisthoplatia, g. n., p. 198, with abbreviated elytra; including 4 species; figured *O. orientalis* (Burm.), pl. 5. fig. 22.

The Periplanetidæ include the genera:—

Polyzosteria (Burm.), with 22 species, of which 5, including *P. limbata* (Burm.), pl. 5. fig. 23, belong to the subgenus *Polyzosteria* sens. str., whilst the remainder form a new subgenus, *Platyzosteria*. The latter includes *P. melanaria, atrata*, and *aterrima* (Erichs.), and *mexicana* (Sauss.). 17 new species.

Periplaneta (Burm.), also with 22 species, 6 of which are new, includes as a subgenus *Stylopyga* (Fisch.); figured *P. americana* (Linn.), pl. 5. fig. 24.

Deropeltis (Burm.), with 11 species, 5 new; figured *D. erythrocephala* (Fab.), pl. 8. fig. 38. And

Archiblatta (Voll.), sp. *A. hoevenii* (Voll.), pl. 8. fig. 39.

To his Chorisoneuridæ Wattenwyl refers:—

Oxyhaloa, g. n., p. 252; apical field of wings 0; including 4 African species, namely, *O. ferreti* (Reiche & Fairm.), *O. fulviceps* (Klug), *O. murrayi* (Dohrn, MS.), p. 253, pl. 6. fig. 25, and *O. minor*, sp. n., p. 254.

Chorisoneura, g. n., p. 255, with a distinct anal vein in the elytra, and their scapular vein pinnately ramose; including 5 species, 2 new; figured *C. nigrifrons* (Serv.), pl. 6. fig. 26.

Arcolaria, g. n. (Fieb. MS.), p. 259, with the branches of the scapular vein parallel to the axis of the elytra; including two new species—*A. fieberi*, p. 260, pl. 6. fig. 27, Batavia, and *A. bipunctata*, p. 261, Philippine Islands.

Cassidodes, g. n., p. 261, with the elytra very convex and wide, without an anal vein; *C. ligata*, sp. n., p. 262, pl. 6. fig. 28, Philippine Islands.

Hypnorna (Stål), with 1 sp., *H. hummeli* (Stål).' And

Eleutheroda, g. n., p. 264, with the triangular apical field half as long as the wing, closely reticulated; including *E. dytiscoides* (Serv.), pl. 6. fig. 29, and *E. minor*, sp. n., p. 265, from the Philippines.

In the Panchloridæ are included the genera:—

Gyna, g. n., p. 266, winged in both sexes, and with the pronotum triangularly produced behind; including *P. maculipennis* (Schaum), pl. 6. fig. 30, and 2 new species, one probably = *Panchl. caffrorum* (Stål).

Panchlora (Burm.), with 15 species, 3 new; divided into the subgenera *Panchlora* s. str., figured *P. pulchella* (Burm.), pl. 7. fig. 31, and *Leucophæa*, figured *P. surinamensis* (Linn.), pl. 7. fig. 32.

Nauphæta (Burm.), 5 species, 2 new; figured *N. lævigata* (Pal. B.), pl. 7. fig. 33.

Zetobora (Burm.), with 9 species, 2 new; *Z. transversa*, p. 290, pl. 7. fig. 34, and *Z. limbata*, p. 291, Brazil.

Philobora, g. n., p. 294, with the elytra in repose exposing the margins of the abdomen and the scapular area constricted and plicate; including 3 Brazilian species; figured *P. conspersa* (Guér.), pl. 7. fig. 38; *P. elegans*, sp. n., p. 297. And

Oniscosoma, g. n., p. 298, with the ♀ apterous, and the pronotum cucullate; 2 new sp., *O. castanea*, p. 300, pl. 7. fig. 36, and *O. pallida*, p. 301, Australia.

To the Perisphæridæ are referred:—

Perisphæria (Serv.), with 8 species; new *P. discoidalis*, p. 310, from the Cape; figured *P. stylifera* (Burm.), pl. 8. fig. 37.

Parasphæria, g. n., p. 311, with rudimentary elytra in ♀, and head more or less exposed; 3 species; new *P. castanea*, p. 315, Brazil; figured *P. ovata* (Blanch.), pl. 9. fig. 40 (sub nom. *Deropeltis ovata*).

Derocalymma (Burm.), with 9 species, 3 new; figured *D. atra*, sp. n., pl. 9. fig. 41, and *D. dispar* (Burm.), pl. 9. fig. 42.

Prosecratea (Burm.), 3 species; new *P. marginata*, p. 326, Madagascar; figured *P. complanata* (Perty), pl. 9. fig. 43.

Hormetica (Burm.), with 5 species, 2 new; figured *H. vittata*, sp. n., p. 330, pl. 9. fig. 44.

Homalodemas (Stål); sp. *H. exarata* (Stål). And

Gromphadorhina, g. n., p. 333, with the pronotum gibbous, and the ♀ apterous; sp. *G. portentosa* (Schaum), pl. 9. fig. 45.

The Corydidæ include:—

Corydia (Serv.), with 5 species; new *C. ænea*, p. 340, India; figured *C. nuptialis* (Gerst.), pl. 10. fig. 46, and *C. petiveriana* (Linn.), pl. 10. fig. 47, abd. ♀.

Melestora (Stål), with 2 species.

Euthyrrhapha (Burm.), including only *E. pacifica* (Coqb.), pl. 10. fig. 48.

Latindia (Stål), with *L. maurella* (Stål) and *L. signata*, sp. n., p. 345, pl. 10. fig. 49.

Holocompsa (Burm.), with 4 species; figured *H. collaris* (Burm.), pl. 10. fig. 50. And

Diaphana, g. n. (Fieb. MS.), p. 348, with the elytra entirely membranous and pellucid; sp. *D. fieberi*, sp. n., p. 349, pl. 10. fig. 51.

To the HETEROGAMIDÆ are referred only :—

Heterogamia (Burm.), with 6 species, 3 new; figured *H. ægyptiaca* (Linn.), pl. 10. fig. 52. And

Homœogamia (Burm.), with *H. mexicana* (Burm.), pl. 11. fig. 53.

The BLABERIDÆ include :—

Monachoda (Burm.), with 9 species, 2 new; figured *M. reflexa* (Serv.), pl. 11. fig. 54. And

Blabera (Burm.), with 12 species, 3 new; figured *B. atropos* (Stål), pl. 12. fig. 55.

And the PANESTHIDÆ consist of:—

Parahormetica, g. n., p. 385, with the pronotum gibbous, semiorbicular in front, concealing the head, and the elytra lobiform; including *P. monticollis* (Burm.) and *P. tumulosa*, sp. n., p. 385, pl. 12. fig. 56.

Dasyposoma, g. n., p. 387, with the pronotum smooth, and elytra 0; species *D. punctulata* (Scudder); *D. nigra*, sp. n., p. 388, pl. 13. fig. 57, and *D. bicolor*, sp. n., p. 388, Brazil.

Panesthia (Burm.), with 6 species, 2 new; figured *P. javanica* (Serv.), pl. 13. fig. 58. And

Paranauphaeta, g. n., p. 397, having the pronotum smooth, and its anterior margin truncate; with 5 species; new *P. rufipes*, p. 400, Ternate; figured *P. circumdata* (De Haan), pl. 13. fig. 59.

MANTIDÆ.

TRIMEN notices a species of this family with minute fore legs, and resembling *Bacillus*. Bate suggests that it will be found to feed upon *Bacillus*. Proc. Ent. Soc. 1867, p. cv.

DENNY (Ann. & Mag. N. H. 3rd ser. xix. p. 144) notices the hatching of an Australian species of this family at Leeds. He states that at Melbourne specimens of this insect are placed upon the window-blinds, where they capture the flies.

PHASMIDÆ.

Anisomera buprestoides (?). A note on this species by C. B. King is published in Proc. Ent. Soc. 1867, pp. lxxviii–lxxx. The author observed the species in Jamaica. The prothorax contains 2 glands, secreting a fetid fluid, which is discharged through 2 elevated pores and serves as a defensive agent. The adult insects are almost always found in copulation. They are nocturnal or crepuscular and gregarious in their habits, are slow in their motions, and feed upon the leaves of *Bignonia chinensis*. Their mode of feeding is described. The eggs [egg-cases] are cylindrical, and about an eighth of an inch in length; they are subject to the attacks of an Hymenopterous parasite, probably belonging to the *Chalcididæ*. The female is also attacked by an Ichneumonidous parasite. Bates doubts the identification of the species, which he thinks is a true *Phasma*. Smith doubts the completion of the transformation of a Chalcidite within the egg of the *Phasma*; and M'Lachlan suggests that the cocoon of the parasite was mistaken by the author for the egg.

RITCHIE (Canad. Nat. & Geol. iii. pp. 66–69) notices the habits and structure of the Canadian *Spectrum femoratum*. His entomological knowledge is evidently very limited, as evidenced especially by his reference to the eggs of the insect.

Locustidæ.

Phalangopsis annulata, sp. n., Bilimek, Verh. zool.-bot. Ges. in Wien, xvii. p. 901, Mexico (Cave of Cacahuamilpa).

Acrydiidæ.

Köppen has published (Horæ Soc. Ent. Ross. iii. pp. 89–246) an elaborate memoir on the migratory Locust of Southern Russia. He gives in the first place a bibliography of his subject, which includes several memoirs published in Russian journals. With regard to the species, Köppen remarks on the various opinions of entomologists as to the relation between *Pachytylus migratorius* (Linn.) and *P. cinerascens* (Fab.), and comes to the conclusion that the two supposed species are to be regarded as varieties of one and the same, and that *Œdipoda tatraica* (Motsch.) is identical with *P. cinerascens*. The form which he met with most abundantly in South Russia is the true *P. migratorius*.

The development of the insect is described by Köppen in detail. The eggs are deposited by the females, to the number of 60–100 together, in little nests surrounded by a membranous envelope; the eggs are laid in autumn and the young hatched in the following spring. The envelope is burst a little while before the exclusion of the young. The eggs display a great power of resisting the influence of cold; they have been found to retain their vitality when the temperature reached −26° F., when placed with earth in a large glass vessel.

The larvæ are said by Köppen to moult four times, and the fourth moult produces the winged insect. The different stages are described by Köppen. At the end of May (1861), eggs taken from the ground showed the eyes, antennæ, segments, and legs of the larvæ distinctly; and a little while before hatching, the larvæ could move within the egg. On its emergence the larva is yellowish white, with a rosy tinge; in 3–4 hours its colour is greyish black. Before and during each moult the larvæ are sluggish. At the final moult, which always takes place in the hottest sunshine, the animals hang head downwards, by the hind feet, upon the stalks of grasses &c. This enables the insects to twist about in all directions, in order to free themselves from the skin. The expansion of the wings occupies about twenty minutes after the completion of the moult (twenty-two minutes according to Köste, who says that the moult itself occupies sixteen minutes); during this period Köppen observed that a dark yellow fluid was distributed over the wings in microscopic drops. The period which elapses between the arrival of the insect at the winged state and the deposition of the eggs is uncertain; the statements of different authors vary between 4 weeks and 2 months.

Köppen describes the nearly indiscriminate voracity of these Insects, but remarks that certain plants appear to be avoided by them, namely, flax and hemp, the Cucurbitaceæ, and, according to Petzholdt, dwarf garden-beans. The Gramineæ seem to furnish their favourite food. They prefer the leaves and other soft parts of plants and trees, but also sometimes gnaw the bark and even the wood of the latter. In time of scarcity they will attack straw thatch and woollen clothes, and even devour each other. Köppen notices the statement made by various authors that the larvæ for the first ten days live upon dew, and treats it as an absurdity.

The perfect insects copulate almost immediately after the last change of

skin. The union of the sexes continues apparently for a considerable time, from 12 to 18 or even 24 hours, but sometimes only for an hour or two. The female carries the male about with her, and feeds as if alone; she is, however, unable to fly. The male sits quite motionless, only giving a sign of life by stridulation if another male should approach.

The eggs are deposited about seven days after copulation, according to Köste. The female digs a hole in the earth of about 1½ inch deep by means of the hook-like horny organs of the apex of the abdomen; and the eggs are then laid, in cylindrical masses usually placed at an angle of about 45° to the surface. The eggs are united by a spongy mass (cement), which also envelops the whole outside of the mass; here, by the adhesion of grains of sand, small stones, &c., it forms a sort of wall which protects the eggs from injurious external influences. The mass is sometimes formed wholly or partially of the frothy cement without eggs; Yersin ascribed this to a morbid condition of the female, and doubts whether the few eggs contained in such masses are capable of development. Köppen has found on removing the female insect that the pit which it had dug was filled with the frothy mass, without any eggs. This seems to the Recorder to indicate rather that the cement mass is first produced by the insect, and the eggs afterwards laid in it; the nests found containing the spongy mass without eggs would then be easily accounted for, on the supposition that the females were disturbed or destroyed when just about commencing the actual business of oviposition. The number of eggs laid in each nest seems to vary from 50 to 90 or 100; and the ovary of the female contains from 100–150 eggs, according to Krünitz. The question whether the females copulate more than once has been much discussed in Russia; and from the author's statements it would appear that the popular opinion is that the act of copulation only takes place once. From Köste's observations, however, it is certain that the females copulate and deposit their eggs several times. He observed a female, in confinement, which copulated with six different males before laying her first batch of eggs; and afterwards the same phenomena were repeated four times, the insect dying when engaged in oviposition for the sixth time. From his own observations, and those of other authors, Köppen regards it as most probable that copulation and oviposition are repeated usually at least three times by each female, perhaps at intervals of about a month, as stated by Yersin, the total number of eggs being from 160–170.

Upon the rapidity of movement of the Locusts in the larval condition the statements of authors are at variance. The observations of Sydow and Dönzingk give about a quarter of a German mile (*i. e.* about 0·975 mile English) in the hour; Tschemewsky asserts that they only advance about 350 feet in the day upon grass land.

Of the senses of the Locust, Köppen seems to regard hearing as the sharpest. The senses of smell and taste are exerted in the selection of food, and that of touch is displayed in the sensibility of the insects to changes of weather, especially temperature. Sociability is regarded by the author as characteristic of the Locusts: the larvæ proceeding from one nest seem to keep together for a time; they afterwards associate in larger masses, which move together in search of nourishment. These migrations in mass commence in the second stage of larval life, but become more general after the second moult. The migration usually takes place in the morn-

ing and evening. The author remarks upon the direction of the migrations of these insects, which he regards as influenced to a certain extent by an instinctive perception of the direction in which abundant food or a suitable breeding-place is to be found, but modified or even sometimes caused by external agents, especially the winds. The author also discusses the primary causes of the great migrations of these insects and the phenomena observed during their flight.

In the south of Russia the hatching of the eggs takes place, according to the weather, at the end of April or beginning of May. A few larvæ are sometimes produced on warm days in October, but these soon die. The hatching occupies from 2 to 3 weeks, according to circumstances. The winged insects appear in the beginning and middle of July; copulation takes place early in August; and the oviposition extends from the middle of August to October. The dry steppes constitute the chief haunt of the Locusts; damp places they seem to avoid. The females prefer for the reception of their ova the solid virgin soil, and rarely visit ploughed land for this purpose. Damp and cold are unfavourable to the development of the eggs. The author discusses in great detail the external conditions which act favourably or unfavourably upon these insects. The greater part of this section is devoted to the consideration of their enemies, of which Köppen gives a formidable list (pp. 151–166).

Linné and other authors have given Tartary as the true home of the migratory Locusts; but in Tartary no large swarms occur. In the author's opinion, the countries in which the swarms are seen are also the countries of their birth. He cites many facts in support of this opinion and in illustration of the geographical distribution of the insect, the northern limit of their migratory or nomadic life being a line passing from Spain through the south of France, Switzerland, Pomerania, South Russia, and South Siberia to the north of China. To the north of this line the insects generally occur only singly. Many interesting details as to their occurrence in vast numbers are given by the author (pp. 190–205).

Köppen also describes the injury done by the Locusts when they occur in great numbers, and indicates the means adopted for their suppression (pp. 205–246).

Caloptenus italicus. Köppen also notices this species (*l. c.* pp. 246–263), which likewise occurs in South Russia, and then, as in other regions of southern Europe, sometimes in injurious numbers. Other species which are also occasional devastators, especially when associated with the migratory species, are *Pachytylus stridulus*, *Œdipoda vastator*, *Stauronotus vastator*, *S. cruciatus*, and *Pezotettix alpina* (pp. 263–268). In an appendix the author notices some other injurious insects, belonging chiefly to the orders Coleoptera and Lepidoptera.

Jäckel (Corr.-Blatt zool.-min. Ver. Regensb. xxi. pp. 83–93) publishes a supplementary notice on the occurrence of *Œdipoda migratoria* in Bavaria. He cites various records of the visits of this species in swarms during the fourteenth century, one towards the close of the fifteenth, and one at the end of the seventeenth century, and gives a long account of a similar visitation in 1749. Since that year no swarms of Locusts have occurred in Bavaria.

Some notes on the Algerian Locusts (*Acrydium peregrinum, migratorium,*

&c.) by Come, have been communicated to the Entomological Society of France by Giraud. In them mention is made of a special work on the same subject, which the Recorder has not yet seen. Bull. Soc. Ent. Fr. 1867, pp. x-xiii. The locusts visiting Algeria come from the south, and arrive in May. They lay their eggs soon after their arrival, and the young animals produced from these eggs usually become adult in July. In August all usually disappear. Come also notices the arrival in Algeria in the early part of January 1867 of a flight of locusts. The colour af these was stated to be reddish. It appears that on first attaining their adult form, these insects are of a rosy tint, and afterwards change; and Come thinks that it is not until after their change of colour that they are fitted for reproduction. Lallemant states (*l. c.* p. xiii) that the Locusts, which live for a long time in the adult state, are at first rosy, then emigrate southwards, and return in winter of their mature colour.

Caloptenus italicus (Linn.). Künstler reports on this insect as injurious to corn-crops in Austria in 1866 and 1867. Verh. zool.-bot. Ges. in Wien, xvii. pp. 930-932.

A notice of the "Red-legged Grasshopper," *Caloptenus femur-rubrum*, appears in the American Naturalist, i. pp. 271-272; see also p. 330.

Trimen mentions his having found the pupæ of a species of *Pœcilocerus* in copulation at Natal. Proc. Ent. Soc. 1867, p. cv.

RHYNCHOTA.

A. *Work in progress.*

Walker, Francis. Catalogue of the specimens of Heteropterous Hemiptera in the Collection of the British Museum. Parts I. and II. Scutata. London, 1867, pp. 417, 8vo.

In this work Walker commences a catalogue of all the described species of Heteroptera, with indications of those which are contained in the collection of the British Museum. In the arrangement he has closely followed the system adopted by the Recorder in his Catalogue of the Scutata in the British Museum, working in the new genera since described, and describing a great number of new species. The work promises to be very useful, but unfortunately it is disfigured by many misprints.

B. *Papers published in Journals &c.*

* *Descriptive &c.*

Douglas, J. W. On some peculiarities in the development of Hemiptera-Heteroptera. (Continued.) Ent. Monthly Mag. vol. iii. pp. 200-201, and vol. iv. pp. 30-33.

——, and Scott, John. British Hemiptera: additions and corrections. Ent. Monthly Mag. vol. iv. pp. 1-6, 45-52, and 93-100, plate 1.

Frauenfeld, G. von. (See "Insecta.")

Graber, Vitus. Kleiner Beitrag zur Hemipterenfauna Tirols. Zeitschr. des Ferdinandeums &c., 3te Folge, Heft xiii. pp. 255–260.

A list of Heteroptera captured by the author in the Tyrol in the summer [of 1866 ?].

Jakowlew, W. Die Hemiptera der Wolga-Fauna. Horæ Soc. Entom. Rossicæ, tome iv. pp. 145–163 : 1867.

A catalogue of Heteroptera, with indications of localities, food-plants, &c. It contains diagnoses of a few new species, and references to others described by the author in 1864 in a Russian paper published in the scientific memoirs of the University of Kasan.

Kuschakewitsch, A. Нѣсколько новыхъ видовъ полужесткокрылыхъ насѣкомыхъ. [Descriptions of some new Hemipterous Insects.] Horæ Soc. Entom. Rossicæ, tome iv. pp. 97–101, pl. 2 : 1866.

Descriptions of new species of *Pyrrhocoris* and *Cimex* (= *Pentatoma*). The diagnoses are in Latin.

Kouchakéwitch, J. *Dorycephalus* genre nouveau de Homoptères. Ibid. pp. 102–104.

Löw, F. (See "Insecta.")

Marshall, T. A. An Essay towards a knowledge of British Homoptera. (Continued.) Ent. Monthly Mag. vol. iii. pp. 197–200, 218–221, 246–248, and 265–270.

Mulsant, E., and Rey, Cl. Histoire naturelle des Punaises de France. (Pentatomides, suite.) Ann. Soc. Linn. de Lyon, tome xiv. pp. 1–288, pls. 1 & 2 : 1867.

This paper contains the continuation of the natural history of the French Heteroptera, the previous portions of which have been noticed in preceding volumes of the 'Record.' It completes the Scutata, and is published as the second part of the separate work.

——, ——. Description d'une espèce nouvelle de Géocorise, constituant un genre nouveau parmi les Ligéides. Ann. Soc. Linn. de Lyon, tome xiii. p. 368, and tome xiv. p. 390.

Shimer, H. Notes on *Macropus* (*Lygæus*) *leucopterus*, Say ("the Chinch Bug"), with an account of the great epidemic disease of 1865 among Insects. Proc. Acad. Nat. Sci. Philad. 1867, pp. 75–80.

——. On a new genus in Homoptera. Ibid. pp. 2–11.

Signoret, V. Etudes sur le genre *Phylloxera* de Fonscolombe. Annales Soc. Ent. France, 4e série, tome vii. pp. 297–304.

——. Notice sur un Homoptère peu connu (*Periphyllus*). Ibid. pp. 371–380, pl. 10 : December 11, 1867.

Solsky, S. Matériaux &c. (see "Coleoptera"). III. Un hétéroptère nouveau du midi de la Russie. Horæ Soc. Entom. Rossicæ, tome iv. pp. 185–187 : 1867.

Stål, C. Bidrag till Reduviidernas kännedom. Œfversigt af K. Vet.-Akad. Förhandlingar, vol. xxiii. pp. 235–302.

Targioni-Tozzetti, H. Sur la cire qu'on peut obtenir de la Cochenille du Figuier (*Coccus caricæ*, auct.). Comptes Rendus, lxv. pp. 246–247.

Vollenhoven, S. C. Snellen van. Eenige nieuwe Soorten van het Geslacht *Dalcantha*, Am. & Serv. Tijdschrift voor Entom. 2de serie, Deel i. pp. 216–221, pl. 11 : 1866.

† *Anatomical and Physiological.*

Balbiani, —, et Signoret, V. Sur le développement du Puceron brun de l'érable. Comptes Rendus, lxiv. pp. 1259–1263. Translated in Annals & Mag. N. H. 3rd series, vol. xx. pp. 149–152.

——. Remarque sur la Note précédente (de M. Claparède). Annales Sci. Nat. 5e sér. tome vii. pp. 30–31. Translated in Ann. & Mag. N. H. 3rd series, vol. xix. pp. 367–368.

Claparède, E. Note sur la reproduction des Pucerons. Annales Sci. Nat. 5e sér. tome vii. pp. 21–29. Translated in Ann. & Mag. N. H. 3rd series, vol. xix. pp. 360–367.

[Künckel, Jules. Recherches sur les Organes de sécrétion chez les Insectes de l'ordre des Hémiptères. Ann. Soc. Ent. Fr. 4e sér. tome vii. pp. 43–46 : June 12, 1867 (see 'Record,' 1866, p. 535).]

Heteroptera.

Frauenfeld (Verh. zool.-bot. Ges. in Wien, xvii. pp. 433 and 456–460) indicates the species of this group noticed by him at sea and on board the 'Novara' during that vessel's voyage round the world. He refers specially to the genus *Halobates*, of which he describes a new species.

Jakowlew publishes (Horæ Soc. Ent. Ross. iv. pp. 145–163) a list of the Heteropterous Rhynchota of the banks of the Wolga, in which he enumerates 299 species.

Various North-American species of Heteroptera are noticed and figured by Packard, Amer. Nat. i. pp. 327–329.

Douglas has continued his remarks upon some peculiarities in the development of these insects. His first notice (Ent. M. Mag. iii. pp. 200–202) relates to the reproduction of the antennæ when damaged or amputated; his second (*op. cit.* vol. iv. pp. 30–33) to irregularities in the elytra and wings. In the latter he gives a list of British species in which these organs are more or less aborted, and notices the peculiar forms of the elytra which occur in the *Tingidides*.

SCUTATA.

Scutellerides.

Sophela, g. n., Walker, Cat. Hem. i. p. 17. Allied to *Callidea*; lateral angles of pronotum acutely spinous. Sp. *Callidea spinigera* (Dall.).

Fitha, g. n., Walker, *l. c.* p. 45. Allied to *Callidea*, but antennæ 4-jointed, joints 2–4 nearly equal. Sp. *F. ardens*, sp. n., Walk. *l. c.* p. 45, India.

Testrina, g. n., Walker, *l. c.* p. 61. Body broadly elliptical, very convex; head transverse, subangulate in front; antennæ 5-jointed, 1 and 2 short; thorax transverse, dilated and rounded at the sides; scutellum exceeding abdomen; legs stout. Sp. *T. laticollis*, sp. n., Walk. *l. c.* p. 61, Amazons.

Testrica, g. n., Walker, *l. c.* p. 69. Allied to *Trigonosoma*; broadly elliptical; head small, produced, subquadrate in front, lateral lobes broad in front, far exceeding the middle lobe. Sp. *T. antica*, sp. n., Walk. *l. c.* p. 70, Adelaide.

WALKER (Cat. Hem. i. pp. 1–75) describes numerous new species belonging to this group and to the following genera:—*Coleotichus* 5, *Sphærocoris* 3, *Pœcilocoris* 4, *Cryptacrus* 3, *Tectocoris* 3, *Cantao* 1, *Scutellera* 4, *Tetrarthria* 16, *Callidea* 33, *Pachycoris* 12, *Symphylus* 2, *Hotea* 6, *Agonosoma* 1, *Bolbocoris* 3, *Eurygaster* 2, *Podops* 8, and *Phimodera* 1.

Odontoscelides.

Cursula, g. n., Walker, Cat. Hem. i. p. 81. Allied to *Corimelæna*; globose, shining; head small; eyes elongate; rostrum reaching posterior coxæ; joints 4 and 5 of antennæ elongate; scutellum with a recurved suture [?] on each side; legs smooth. Sp. *C. globifera*, sp. n., Walk. *l. c.* p. 81, Para and Santarem.

Cænina, g. n., Walker, *l. c.* p. 82. Allied to *Corimelæna*; short, convex, shining; head conical, middle lobe shorter than lateral; antennæ slender, about half as long as the body. Sp. *C. variolosa*, sp. n., Walk. *l. c.* p. 82, Burmah.

WALKER (Cat. Hem. i. pp. 75–81) describes 6 new species of *Corimelæna*.

Plataspides.

Tetrisia, g. n., Walker, Cat. Hem. i. p. 111. Allied to *Plataspis*; body ovate, convex, rough; head transverse, rounded in front; rostrum passing posterior coxæ; antennæ short; pronotum with a transverse furrow, in front of which the lateral margins are rounded and serrated. Sp. *T. bruchoides*, sp. n., Walk. *l. c.* p. 112, Singapore.

WALKER (Cat. Hem. i. pp. 82–111) describes numerous new species of this group, belonging to the following genera:—*Coptosoma* 33, *Brachyplatys* 20, and *Plataspis* 1.

Oxynotides.

Teressa, g. n., Walker, Cat. Hem. i. p. 113. Allied to *Tarisa*; stout, tuberculate; head elongate, quadrangulate in front; rostrum reaching posterior coxæ; prothorax with an anterior erect tubercle; scutellum gibbous and bicarinate at base; corium tuberculate. Sp. *T. terranea*, sp. n., Walk. *l. c.* p. 113, North China.

II. Pronotum at base covering at least half the base of the endocorium.
A. Claws simple..... *Dalleria* *, g. n.
B. Claws with a tooth about the middle of the inside.
Onylia, g. n.

Mulsant & Rey propose the name of *Eysarcoris epistomalis* for *Pent. inconspicuum* (H.-Sch.), the latter having been given to another species by Bärensprung. They also reject Fieber's name *Eysarcoris helferi*, on the ground that we have also a *Sciocoris helferi* (Fieb.) and that they have laid down the rule that there must not be "two identical specific names in the same family." But in their classification *Sciocoris helferi* and *Eysarcoris helferi* belong to distinct families! and under any circumstances the adoption of such a rule will never be tolerated by naturalists.

The Pentatomiens of Mulsant & Rey are divided by them into 3 "Branches" (*l. c.* p. 112), namely:—the
Aulacétraires, with a median ventral furrow; the
Strachiaires, with a strongly marked border to the anterior emargination of the pronotum, and the head margined; and the
Pentatomaires, with the head and anterior emargination of the pronotum scarcely, if at all, bordered.

The first of these groups includes only the genus *Aulacetrus* (*fibulatus*, Germ., figured pl. 2. fig. 12), which appears to be identical with *Holcogaster* (Fieb.), the authors having adopted Amyot's name for the *species* as generic. On what principle one of Amyot's names, whose 'Méthode Mononymique' is an avowed protest against the binominal nomenclature, should be allowed to take precedence of a regularly established generic name, it is difficult to see.

The *Strachiaires* include the genus *Strachia* (=*Strachia* and *Eurydema*, auctt.) and a new genus.

Between the Strachiaires and the Pentatomaires Mulsant and Rey propose (*l. c.* p. 156) to place their *Aspongopaires*, a proceeding in which few entomologists will be inclined to follow them, any more than in placing together in a single "Branche" 2 "Rameaux" so dissimilar as the *Aspongopates* and *Phyllocéphalates*. They describe *Aspongopus niger* (Fieb.) and *Schizops ægyptiaca* (Lefebvre).

Their *Pentatomaires* include 2 "Rameaux," namely the *Carpocorates* and *Pentatomates*. The former have a black point on each cotyle, forming a longitudinal row on each side of the breast, and the edges of the abdomen banded with black; these characters are wanting in the second group. The *Carpocorates* include the genera *Carpocoris* (Kolen.), *Peribalus*, g. n., and *Dryocoris* (Amyot), the last preferred by the authors to *Holcostethus* (Fieb.) on the ground of the latter being "so hard to pronounce"! *Carpocoris* is divided into 4 subgenera, namely *Carpocoris* (sp. *baccarum*), *Codophila* (sp. *nigricornis*, Fab., *melanocera*, M. & R., *lunula*, Fab., and 1 n. sp.), *Authenina* (sp. *lynx*, Fab.), and *Dolycoris* (sp. *verbasci*, De G.).

Of their Pentatomates, Mulsant & Rey make 4 genera, namely *Pentatoma*, *Palomena* (g. n.), *Brachynema* (M. & R.), and *Nezara* (A. & S.), the last certainly more nearly allied to *Rhaphigaster* in the following group. *Pentatoma macrorampha* (Fieb.) = var. *pinicola* (M. & R.).

The *Acanthosomiens* of Mulsant & Rey include 2 "Branches," the *Rhaphi-*

* Spelt *Daleria* in Table (p. 91).

gastéraires and the *Acanthosomaires*, distinguished by their having the tarsi composed respectively of 3 and 2 joints; and the latter are again divided into *Acanthosomates* with the mesosternal plate reaching or passing the anterior margin of the prosternum, and *Sastragalates* with this plate shorter.

The first includes only *Acanthosoma hæmorrhoidalis* (Linn.); the *Sastragalates* constitute 3 genera, 2 of which are new, *Elasmostethus* and *Cyphostethus* (Fieb.) being discarded as not divided on natural principles. Figures are given of *Acanthosoma hæmorrhoidalis* (pl. 2. figs. 15–17) and *Sastragala ferrugator* (figs. 18–19). *Tropicoris rufipes* is referred to the *Asopiens*.

New genus and species:—

Dalleria, g. n., Mulsant & Rey, *l. c.* p. 103. (See Table p. 468.) Sp. *Cimex pusillus* (H.-Sch.)=*Eysarc. binotatus* (Hahn) and *Eusarc. grenieri* (Sign.).

Onylia, g. n., Mulsant & Rey, *l. c.* p. 108. (See Table p. 468.) Sp. *Cimex bipunctatus* (Fab.)=*P. amœna* (Brullé), figured pl. 1. fig. 11.

Nitilia, g. n., Mulsant & Rey, *l. c.* p. 120. Allied to *Strachia*; middle lobe of head projecting beyond the lateral ones; head triangular. Sp. (subg. *Nitilia*) *Eurydema stolidum* (H.-Sch.); (subg. *Minodia*) *N. variegata* (Klug, MS.?), Muls. & Rey, *l. c.* p. 122, south of Europe.

Peribalus, g. n., Mulsant & Rey, *l. c.* p. 185. Allied to *Carpocoris*; joint 2 of antennæ scarcely longer than 3; median lobe of head enclosed. Sp. *Cimex vernalis* (Wolff) and *Pent. inclusa* (A. Dohrn).

Palomena, g. n., Mulsant & Rey, *l. c.* p. 200. Allied to *Pentatoma*; margin of abdomen almost uniformly marked with black points on a pale ground; head somewhat rounded in front, median lobe nearly enclosed. Sp. *Cimex viridissimus* (Poda)=*prasinus* (Linn. F. S.?, Latr., Hahn, &c.).

Meadorus, g. n., Mulsant & Rey, *l. c.* p. 238. Allied to *Sastragala*; pronotum wider at its base than the scutellum, lateral angles not forming long spines. Sp. *Cimex interstinctus* (Linn.) and *lituratus* (Panz.).

Oxydalus, g. n., Mulsant & Rey, *l. c.* p. 247. Allied to *Sastragala*; pronotum not wider at base than scutellum, lateral angles not spinous. Sp. *Cimex dentatus* (De G.).

Bolaca, g. n., Walker, Cat. Hem. ii. p. 251. Allied to *Diceræus*; prothorax unarmed, its margin subcrenulate; joints of antennæ successively increasing in length. Sp. *B. unicolor*, sp. n., Walk. *l. c.* p. 251, North India.

Asyla, g. n., Walker, *l. c.* p. 403. Allied to *Galedanta* and *Euschistus*; head large, lateral lobes partly overlapping median lobe; rostrum reaching second abdominal segment; lateral angles of thorax forming short, rectangular horns; tibiæ sulcate; membrane with 5 longitudinal veins, the first furcate. Sp. *A. indicatrix*, sp. n., Walk. *l. c.* p. 403, India.

Canoca, g. n., Walker, *l. c.* p. 404. Allied to *Euschistus*; angles of thorax forming 2 broad, deflexed, truncate horns; breast with a slight keel. Sp. *C. abrupta*, sp. n., Walk. *l. c.* p. 404, Guatemala.

Sala, g. n., Walker, *l. c.* p. 404. Allied to *Eysarcoris*; head large, elongate, sides very slightly reflexed; antennæ very slender, more than half as long as body; hemelytra small, not reaching apex of abdomen. Sp. *S. colorata*, sp. n., Walk. *l. c.* p. 405, East Africa.

Boca, g. n., Walker, *l. c.* p. 405. Allied to *Strachia*; head small, subtrigonal, sides reflexed; rostrum reaching middle coxæ; antennæ 4-jointed, very slender, joint 1 reaching apex of head, 3 shorter than 2, longer than 4. Sp.

B. purpurascens, sp. n., Walk. *l. c.* p. 405, *B. postica* and *B. auriflua*, sp. n., Walk. *l. c.* p. 406, Amazons.

Lelia, g. n., Walker, *l. c.* p. 406. Allied to *Prionaca*; angles of thorax forming two very broad, porrect, rectangulate horns; sternum scarcely keeled; ventral spine passing middle coxæ. Sp. *L. porrigens*, sp. n., Walk., Japan.

Ucia, g. n., Walker, *l. c.* p. 407. Allied to *Duadicus*; lateral horns of prothorax truncate; antennæ short, clavate, joint 1 shorter than head, 2 longer than 3, 5 shorter than 4; membrane with 5 veins, 2nd forked and joined by a transverse vein to the first. Sp. *U. mutilata*, sp. n., Walk., Australia.

Araducta, g. n., Walker, *l. c.* p. 408. Allied to *Cuspicona*; fusiform; head short and broad; antennæ half as long as body, joint 1 not reaching apex of head, 2 shorter than 3, 4 longest; ventral spine reaching middle coxæ; membrane with 9 veins. Sp. *A. glabrata*, sp. n., Walk., Aru and New Guinea.

Ealda, g. n., Walker, *l. c.* p. 409. Allied to *Diplostira* in its double sternal keel; rostrum reaching hind coxæ; joint 2 of antennæ much longer than 3; lateral spines of thorax very long, stout, acute. Sp. *E. minax*, sp. n., Walk. *l. c.* p. 409, New Caledonia.

Balsa, g. n., Walker, *l. c.* p. 410. Allied to *Arvelius*; ventral spine 0; rostrum reaching hind coxæ; angles of thorax obtuse; pectoral keel very slight; legs very slender. Sp. *B. extenuata*, sp. n., Walk. *l. c.* p. 410, North China.

Walker (Cat. Hem. ii. pp. 241–403) describes a great number of new species belonging to the following known genera:—*Loxa* 3, *Euschistus* 6, *Dicereus* 3, *Mormidea* 14, *Hoplistodera* 4, *Alcinus* 1, *Æschrus* 1, *Eysarcoris*, 9, *Antestia* 2, *Hymenarcys* 1, *Pentatoma* 29, *Strachia* 49, *Bathycœlia* 1, *Vulsirea* 3, *Rhaphigaster* 23, *Prionaca* 2, *Rhopalimorpha* 1, *Duadicus* 2, *Stauralia* 2, *Cuspicona* 21, *Microdeuterus* 1, *Taurocerus* 1, and *Acanthosoma* 8.

Carpocoris tarsata, Mulsant & Rey, *l. c.* p. 169, south of France.

Cimex albosparsus, Kuschakewitsch, Horæ Soc. Ent. Ross. iv. p. 99, pl. 2. fig. 2, Monterey; *C. flavomarginatus*, Kusch. *l. c.* p. 100, pl. 2. fig. 3, and *C. rubromarginatus*, Kusch. *l. c.* p. 101, pl. 2. fig. 4, Russian America.

Pentatoma anabasis, Becker, Bull. Soc. Nat. Mosc. xl. 1. p. 110, Kirghise Steppes (Jenotaewsk) = ? *Acrosternum heegeri* (Fieb.).

Nezara millierei, Mulsant & Rey, *l. c.* p. 213, south of France; *N. heegeri* (Fieb. MS.?), Muls. & Rey, *l. c.* p. 215, south of Europe.

Elasmostethus fieberi, Jakowlew, Arbeiten Univ. Kasan, 1864, p. 125, Nijni-Nowgorod, Kasan.

Urostylides.

Ebora, g. n., Walker, Cat. Hem. ii. p. 415. Allied to *Urochela*; head with the sides reflexed, lateral lobes slightly exceeding median lobe; 2 ocelli; antennæ more than half length of body, joint 1 passing apex of head, 2 much longer than 3, 4 shorter than 2. N. sp. *E. circumdata*, Walk. *l. c.* p. 416, Adelaide; *E. postica*, Walk. ibid., Queensland; *E.? plana*, Walk. ibid., Archidona; and *E.? patula*, Walk. *l. c.* p. 417, Queensland.

Walker (Cat. Hem. i. pp. 411–415) describes 1 new species of *Urochela*, 6 of *Urostylis*, and 1 of *Urolabida*.

Edessides.

Dalcantha. Vollenhoven (Tijdsch. v. Ent. 2de ser. i. p. 216) characterizes this genus, and describes the following new species:—*D. westwoodii*, p. 217,

pl. 11. fig. 5, Sumatra; *D. sancti fargavii*, p. 218, pl. 11. fig. 6, Silhet; *D. amyoti*, p. 219, pl. 11. fig. 7, East Indies?; *D. stâlii*, p. 220, pl. 11. fig. 8, Silhet; and *D. servillei*, p. 220, pl. 11. fig. 9, Malacca.

Supericornia.

Perty (Mitth. naturf. Ges. in Bern, 1867, p. 306) notices an example of *Dicranocephalus nugax* having the right antenna deformed.

Lygæodea.

Douglas and Scott (Ent. M. Mag. iv. pp. 1–3) describe *Lygæus equestris* (Linn.) as a British species.

Shimer has published (Proc. Acad. Nat. Sci. Phil. 1867, pp. 75–80) an account of his observations upon the habits of the Chinch Bug (*Micropus leucopterus*, Say), one of the most formidable enemies of the corn-crops in the United States. He particularly details his observations during the spring and summer of 1865, in which year, after an unusual abundance of insects in 1864, an epidemic disease suddenly broke out among them, and swept off the Chinch Bugs and many other species in great numbers. In a subsequent note (p. 234) Shimer says this insect has entirely disappeared.

Anthocoris nemorum. According to Goureau, this species, especially in the larva state, destroys great quantities of *Aphides*, particularly those which live in crevices of bark, galls, and other concealed places. It also feeds on the larvæ of *Psyllæ* which live under cover, such as *P. fraxini*. Bull. Soc. Ent. Fr. 1867, pp. lxxxv–lxxxvi.

Anthocoris insidiosus (Say) = *A. pseudochinche* (Fitch) is cited by Walsh as frequenting willow-galls. Proc. Ent. Soc. Phil. vi. p. 274.

Baudel describes the ravages committed among the vines in the neighbourhood of Constantine by *Nysius cymoides* (Spin.). Bull. Soc. Ent. Fr. 1867, pp. xxxix.–xli.

Perty (Mitth. naturf. Ges. in Bern, 1867, p. 306) notices an example of a species of *Pachymerus* with the left antenna much abbreviated, and containing only three joints.

Apterola, g. n., Mulsant and Rey, Ann. Soc. Linn. Lyon, xiii. p. 368, & xiv. p. 390. Allied to *Lygæus*; joint 2 of antennæ longest; ocelli small, approximated to the eyes; scutellum short, truncated behind; hemelytra rudimentary, without membrane; wings 0. Sp. *A. künckelli*, sp. n., Muls. and Rey, ibid., Spain.

Nysius albidus, sp. n., Jakowlew, H. S. Ent. Ross. iv. p. 151, Astrachan.

Ophthalmicus arenarius, sp. n., Jakowlew, *l. c.* p. 151, Astrachan.

Rhyparochromus baeri, sp. n., Jakowlew, *l. c.* p. 153, Astrachan.

Cæcigenia.

Pyrrhocoris fieberi, sp. n., Kuschakewitsch, Horæ Soc. Ent. Ross. iv. p. 97, pl. 2. fig. 1, Amour; *P. sibiricus*, sp. n., Kusch. *l. c.* p. 98, Kiachta.

Capsina.

The following species are characterized as British by Douglas and Scott (Ent. M. Mag. iv.):—*Deræocoris* (*Calocoris*) *alpestris* (Fieb.), p. 47, pl. 1. fig. 3; *Litosoma* (*Capsus*) *diaphanus* (Kirschb.), p. 47; *Globiceps dispar* (Boh.), p. 48, pl. 1. fig. 4; *Macrocoleus* (*Capsus*) *sordidus* (Kirschb.), p. 49; *Lygus* (*Phyt.*) *rugicollis* (Fall.), p. 50; and *Lopus superciliosus* (Linn.), p. 51. They also

state (*l. c.* p. 52) that *Lopus miles* (Dougl. & Scott) = *Cimex flavomarginatus* (Don.).

Psallus elegans, sp. n., Jakowlew, Horæ Soc. Ent. Ross. iv. p. 158, Astrachan.

Agalliastes pallipes, sp. n., Jakowlew, *l. c.* p. 158, Chwalynsk.

Teratocoris viridis, sp. n., Douglas & Scott, Ent. M. Mag. iv. p. 46, pl. 1. fig. 2, Perthshire.

Membranacea.

Goureau (Insectes nuisibles, pp. 64–70) notices at considerable length the history of *Cimex lectularius* (Linn.), indicating its characters and the processes adopted for its destruction. He also describes *Reduvius personatus* as one of its enemies.

Zosmenus salsolæ, sp. n., Becker, Bull. Soc. Nat. Mosc. xl. 1. p. 113, Sarepta; *Z. kochiæ*, Beck. ibid., Sarepta.

Aradus wagneri, sp. n., Jakowlew, Arbeiten Univ. Kasan, 1864, p. 113, Kasan.

Reduviina.

Westwood records that a species of this group (probably *Enicocephalus tasmanicus*, Westw.) dances in the air after the fashion of the midges; it also possesses a pleasant musk-like odour. Proc. Ent. Soc. 1867, p. lxxxvii.

Douglas and Scott (Ent. M. Mag. iv. pp. 94–95) state that the insect described by them (in Brit. Hem.) under the name of *Nabis flavomarginatus* = *N. pilosulus* (Först.), and describe the true *N. flavomarginatus* (Scholz) from British examples.

Apiomerida. Stål (Œfvers. Vet.-Akad. Förh. xxiii. pp. 247–248) gives a table of the genera of this subfamily, of which the following is an abridgment:—

I. Intermediate tibiæ with no apical pit for the reception of the tarsi.
  A. Head oval, anteocular and postocular parts of equal length. Micrauchenus (A. & S.).
  B. Head elongate or oblong-obovate, postocular part much longer than anteocular.
    * Joint 1 of rostrum scarcely, if at all, shorter than anteocular part of head; joints 1 and 2 of antennæ about equal; thorax unarmed; hemelytra extending far beyond apex of abdomen. Manicocoris, g. n.
    † Joint 1 of rostrum about half the length of the anteocular lobe of the head; disk of anterior lobe of thorax bispinose; hemelytra scarcely exceeding apex of abdomen. Agriocleptes, g. n.

II. Intermediate tibiæ with a fovea for the reception of the tarsi.
  A. Postocular part of head much longer than the anteocular.
    * Scutellum transverse, semiorbicular; postocular part of head slightly tumescent, narrowed behind; joints 1 and 2 of antennæ nearly equal in length; hemelytra much longer than abdomen; anterior tibiæ incrassate, curved ..... Agriocoris, g. n.
    † Scutellum triangular, equilateral, or produced at apex. Heniartes (Spin.) (= *Trichoscelis*, A. & S.).
  B. Anteocular and postocular parts of head of equal length.

* Antennæ slender, joints 1 and 2 much shorter than apical joints, which are not thickened; ocelli very remote.

APIOMERUS (Hahn).

† Antennæ rather thick and short, joints 3 and 4 slightly thickened, a little longer than basal joint; ocelli less distant from each other than from eyes; posterior lobe of thorax twice as long as anterior.

SPHODROLESTES, g. n.

(*Beharus* and *Ponerobia*, A. & S., unknown to the author.)

Piratida. Stål (Öfvers. Vet.-Akad. Förh. xxiii. pp. 250–252) gives a tabular conspectus of this group, from which the following is slightly abridged:—

I. Intermediate tibiæ not furnished with a spongy pit.

SIRTHENEA (Spin.).

II. Intermediate tibiæ with a spongy pit.

A. Anterior tibiæ convex above.

* Neck unarmed, destitute of lateral tubercles.

a. Head rather suddenly coarctate behind eyes.

1. Ocelligerous part of head elevated; posterior coxæ slightly separated at base, touching at apex.

a. Anterior femora spinulose beneath. LESTOMERUS (A. & S.).

b. Anterior femora without distinct spinules beneath; spongy pit of anterior tibiæ rather small; joints 1 and 2 of antennæ rather thick, 3 slightly thickened at base; thorax constricted behind middle .... MICROSANDALUS, g. n.

2. Ocelligerous part of head scarcely, if at all, elevated; intermediate coxæ distant, anterior femora unarmed.

THYMBREUS (Stål).

b. Head tumid behind eyes, suddenly coarctate behind.

1. Apical joint of posterior tarsi equal to joints 1 and 2 together.

PIRATES (Burm.).

2. Apical joint of posterior tarsi longer than joints 1 and 2 together; ocelligerous part of head not elevated.

FUSIUS (Stål.).

† Neck with a more or less elevated tubercle on each side.

a. Anterior femora compresso-ampliate beneath.

PHALANTUS (Stål).

b. Anterior femora convex beneath.

1. Apical spongy part of anterior tibiæ produced into a lamina more than half the length of the tarsi.

TYDIDES (Stål).

2. Produced apical spongy part of anterior tibiæ less than half the length of the tarsi.

a. Anteocular and postocular parts of head equal in length; body narrow..... PHORUS (Stål).

b. Anteocular longer than postocular part of head.

α. Body oblong-ovate; thorax granulate.

CATAMIARUS (A. & S.).

β. Body elongate or very oblong; thorax not granulate.

** Spongy pit occupying more than half the tibia.

aa. Scutellum subequilateral, or broader than long.

ECTOMOCORIS (Mayr).

ββ. Scutellum longer than broad, produced at apex.
— Scutellum with a long slender spine at apex; apical joint of posterior tarsi shorter than joint 2 or 1 and 2 together.. CALLISPHODRUS, g. n.
= Scutellum somewhat produced at apex; joint 3 of posterior tarsi equal to 1 and 2 together. MACROSANDULUS, g. n.
†† Spongy pit not occupying more than half the tibiæ.
αα. Tylus seen from the side somewhat elevated. MELANOLESTES, g. n.
ββ. Tylus scarcely if at all elevated.
— Apical third of anterior tibiæ thick, bearing the spongy pit..... BRACHYSANDALUS, g. n.
= Spongy pit occupying half the anterior tibia.
0. Scutellum acuminate, produced into a spine. SPHODROCORIS, g. n.
00. Scutellum scarcely produced at apex, not acuminate ..... CLEPTOCORIS, g. n.

B. Anterior tibiæ flat and broad above..... ANDROCLUS (Stål).

(*Dieraotropis*, Mayr, is unknown to the author.)

Stål (*l. c.* pp. 283–285, note) gives the following table of genera closely allied to the genus *Reduvius* (as restricted by him):—

I. Scutellum at the apex only very obsoletely foliaceous, neither reflexed nor concave.
A. Disk of scutellum much elevated.
1. Head and thorax of equal length; posterior lobe of thorax not impressed in the middle; tibiæ linear .. GRAPTOLESTES, g. n.
2. Head a little shorter than thorax; posterior lobe of thorax longitudinally impressed; tibiæ, especially in ♀, thickened in the middle ..... GRAPTOCLOPIUS, g. n.
B. Disk of scutellum scarcely, if at all, elevated.
1. Posterior lobe of thorax somewhat elevated in front. BIASTICUS, g. n.
2. Posterior lobe of thorax not elevated.
a. Anterior lobe of thorax small, ½ length of posterior; abdomen much dilated ..... PŒCILOCLOPIUS, g. n.
b. Anterior and posterior lobes of thorax of equal length, or posterior never more than twice length of anterior.
* Half the membrane projecting beyond the apex of the abdomen. GRAPTOSPHODRUS, g. n.
† Membrane scarcely, if at all, exceeding apex of abdomen.
a. Postocular part of head shorter than anteocular. RHINOCORIS (Hahn).
b. Anteocular and postocular parts of head equal, or postocular longer.
α. Anterior tibiæ a little longer than the femora and trochanters ..... HAGIA (Stål).
β. Anterior tibiæ equal in length to the femora or femora and trochanters.
** Thoracic lobes continuously longitudinally impressed. SPHEDANOLESTES, g. n.

† Posterior lobe of thorax very obsoletely or not at all impressed, the impressions of the two lobes never continuous.

aa. Head and posterior lobe of thorax of equal length. DINOCLEPTES, g. n.

ββ. Head as long as, or longer than, the thorax.

— Posterior lobe of thorax longer than anterior.

0. Joint 1 of rostrum long, extending a little beyond the eyes..... SPHODRONYTTUS, g. n.

00. Joint 1 of rostrum not extending behind eyes. Ocelligerous part of head very much elevated. CATASPHACTES, g. n.

Ocelligerous part of head scarcely or not elevated. REDUVIUS (Fab.).

= Thoracic lobes of equal length; ocelligerous part of head not higher than intraocular; anterior femora incrassate.

0. Body narrow, subelongate. HÆMATOCHARES (Stål).

00. Body rather broad, suboblong. AGRIOCLOPIUS, g. n.

II. Scutellum dilated or foliaceous at apex.

A. Scutellum dilated, reflexed; hemelytra a little exceeding abdomen; femora not nodose ..... COSMOLESTES, g. n.

B. Scutellum slightly foliaceous, and concave at apex; hemelytra very long; femora slightly nodulose..... CALLILESTES, g. n.

Stål (*l. c.* pp. 292–294) publishes a conspectus of the genera of American Reduviida wanting a lateral anterior tubercle on the mesostethium (*Zelus* and allies), of which the following is an abridgement:—

I. Thorax not gibbous or produced behind over the scutellum.

A. Femora bispinose at apex.

1. Postocular part of head gradually narrowing behind when seen from above or from the side; ocelligerous part slightly elevated. RICOLLA.

2. Postocular part of head gradually narrowing behind when seen from above, not from the side, base suddenly coarctate beneath; ocelligerous part scarcely or not elevated.

a. Thorax quadrispinose..... DOLDINA (Stål).

b. Thorax unarmed behind..... HYGROMYSTES.

B. Femora unarmed at apex.

1. Joints 1 and 2 of rostrum equal, or 1 longer than 2.

a. Postscutellum not acutely prominent behind scutellum.

* Head oval, oblong, or elongate, not gibbous beneath.

a. Ocelligerous part of head not elevated.

a. Head subcylindric, postocular part little longer than anteocular, very slightly narrowing behind. FITCHIA (Stål).

b. Postocular part scarcely twice as long as anteocular, distinctly narrowing behind. PIRNONOTA, g. n.

β. Ocelligerous part of head more or less elevated.

ββ. Scutellum longer than broad, produced at apex.
— Scutellum with a long slender spine at apex; apical joint of posterior tarsi shorter than joint 2 or 1 and 2 together.. CALLISPHODRUS, g. n.
= Scutellum somewhat produced at apex; joint 3 of posterior tarsi equal to 1 and 2 together. MACROSANDULUS, g. n.
†† Spongy pit not occupying more than half the tibiæ.
αα. Tylus seen from the side somewhat elevated. MELANOLESTES, g. n.
ββ. Tylus scarcely if at all elevated.
— Apical third of anterior tibiæ thick, bearing the spongy pit..... BRACHYSANDALUS, g. n.
= Spongy pit occupying half the anterior tibia.
0. Scutellum acuminate, produced into a spine. SPHODROCORIS, g. n.
00. Scutellum scarcely produced at apex, not acuminate ..... CLEPTOCORIS, g. n.
B. Anterior tibiæ flat and broad above..... ANDROCLUS (Stål).
(*Dicraotropis*, Mayr, is unknown to the author.)

Stål (*l. c.* pp. 283–285, note) gives the following table of genera closely allied to the genus *Reduvius* (as restricted by him):—

I. Scutellum at the apex only very obsoletely foliaceous, neither reflexed nor concave.
A. Disk of scutellum much elevated.
1. Head and thorax of equal length; posterior lobe of thorax not impressed in the middle; tibiæ linear .. GRAPTOLESTES, g. n.
2. Head a little shorter than thorax; posterior lobe of thorax longitudinally impressed; tibiæ, especially in ♀, thickened in the middle ..... GRAPTOCLOPIUS, g. n.
B. Disk of scutellum scarcely, if at all, elevated.
1. Posterior lobe of thorax somewhat elevated in front. BIASTICUS, g. n.
2. Posterior lobe of thorax not elevated.
a. Anterior lobe of thorax small, ⅓ length of posterior; abdomen much dilated ..... PŒCILOCLOPIUS, g. n.
b. Anterior and posterior lobes of thorax of equal length, or posterior never more than twice length of anterior.
* Half the membrane projecting beyond the apex of the abdomen. GRAPTOSPHODRUS, g. n.
† Membrane scarcely, if at all, exceeding apex of abdomen.
a. Postocular part of head shorter than anteocular. RHINOCORIS (Hahn).
b. Anteocular and postocular parts of head equal, or postocular longer.
α. Anterior tibiæ a little longer than the femora and trochanters ..... HAGIA (Stål).
β. Anterior tibiæ equal in length to the femora or femora and trochanters.
** Thoracic lobes continuously longitudinally impressed. SPHEDANOLESTES, g. n.

a. Juga prominent and more or less acute.

** Postocular part of head about twice as long as anteocular; joint 1 of rostrum extending a little beyond eyes ..... PHOROBURA, g. n.

†† Postocular part a little longer than the anteocular; joint 1 of rostrum not extending beyond eyes.

αα. Apical angles of penultimate segment of abdomen with a large spine .... ATRACHELUS (A. & S.).

ββ. Apical angles of penultimate segment unarmed. ROCCONOTA, g. n.

b. Juga, if prominent, very obtuse at apex.

** Head long, postocular part more than twice as long as anteocular; neck long .... ACANTHISCHIUM (A.&S.).

†† Head variable, postocular part never twice as long as anteocular; neck very short.

αα. Thorax quadrispinose behind.

— Abdomen very slightly if at all widened, margins unarmed ..... REPIPTA (Stål).

= Abdomen widened behind the middle, apical angles of segment spinose. LINDUS, g. n.

ββ. Posterior lobe of thorax unarmed, lateral angles sometimes armed with a denticle or spinule.

— Cells of membrane nearly of equal breadth; anterior tibiæ slightly curved. MYOCORIS (Burm.).

= Anterior cell about twice as broad as posterior; anterior tibiæ straight.

0. Lateral angles of posterior lobe of thorax rounded, not prominent.

Body rather slender; eyes very prominent in ♂; joint 1 of antennæ as long as head and thorax ..... GRAPTOCLEPTES, g. n.

Body rather stout; eyes moderate; joint 1 of antennæ shorter than head and thorax. CASTOLUS, g. n.

00. Lateral angles of posterior lobe of thorax sinuate or denticulate .... SPINDA, g. n.

† Head stout, gibbous and very densely pilose beneath.

a. Anterior cell of membrane much broader than posterior; anterior femora gradually tapering to apex.

a. Anterior angles of thorax unarmed. HIRANETIS (Spin.).

b. Anterior angles of thorax forming a tubercle which is sometimes acute ..... AMAUROSPHODRUS, g. n.

β. Cells of membrane nearly equal in breadth. COSMONYTTUS, g. n.

b. Postscutellum acute, prominent behind scutellum; head long, bispinose; thorax quadrispinose behind. DEBILIA, g. n.

2. Joint 1 of rostrum distinctly, and often much shorter than 2.

a. Joint 1 of rostrum distinctly longer than the anteocular part of the head.

* Legs moderate; lateral angles of posterior lobe of thorax armed with a tooth..... MILYAS (Stål).

† Legs rather long; lateral angles of posterior lobe of thorax rounded..... PYRRHOSPHODRUS, g. n.

b. Joint 1 of rostrum about equal in length to anteocular part of head.

* Anteocular and postocular parts of head of equal length; legs rather short, anterior shorter than posterior.

COSMOCLOPIUS, g. n.

† Postocular part of head longer than anteocular; anterior femora equal to or longer than posterior.

α. Lateral angles of posterior lobe of thorax unarmed.

ZELUS (Fab.).

β. Lateral angles of posterior lobe armed with a tooth or spine.

a. Disk of posterior lobe unarmed. DIPLODUS (A. & S.).

b. Disk of posterior lobe bispinose behind.

PINDUS, g. n.

II. Thorax gibbous, produced backward over the scutellum.

NOTOCYRTUS (Burm.).

New genera:—

Cosmocleptes, g. n., Stål, *l. c.* p. 266. Allied to *Pristhesancus*; head elongate, subcylindrical, postocular part long, gradually diminishing behind; joint 2 of rostrum longest; anterior lobe of thorax bituberculate, posterior without tubercles, lateral angles prominent, scarcely sinuate behind, posterior angles produced into a broad depressed lobe; scutellum with a tubercle which is sometimes dichotomous; mesostethium with a tubercle on each side; abdomen much dilated; legs long. Sp. *Pristhesancus furcifer*, *congrex*, and *phemiodes* (Stål).

Microcleptes, g. n., Stål, *l. c.* p. 240. Allied to *Opsicætus*; head stout, tumid behind the eyes; ocelli small, not much elevated; legs short and stout. Sp. *O. biannulipes* (Montr. et Sign.).

Sphedanocoris, g. n., Stål, *l. c.* p. 240. Allied to *Acanthaspis*; oblong-ovate; head spinulose, short, somewhat tumid and suddenly constricted behind eyes; joints 1 and 2 of rostrum nearly equal; joint 1 of antennæ scarcely reaching apex of head; thorax slightly constricted in the middle, unarmed; scutellum sometimes produced at apex; prostethium bispinose in front; legs short; femora obsoletely spinulose beneath; pit of anterior tibiæ small; joint 3 of post. tarsi scarcely longer than 1 and 2 together. Sp. *A. sabulosa* (Stål).

Agriolestes, g. n., Stål, *l. c.* p. 280. Allied to *Velinus*; head much elongate, postocular part scarcely longer than anteocular; joint 2 of rostrum longest; joint 1 of antennæ as long as head; thorax slightly constricted, unarmed; scutellum transverse, rounded behind; hemelytra scarcely exceeding abdomen; abdomen dilated, dilated segments rounded, umbonate, last segment projecting beyond apex of abdomen; legs rather short and thick; anterior femora slightly thickened; tibiæ slightly tapering to apex. Sp. *Velinus ineptus* (Stål).

Cosmosphodrus, g. n., Stål, *l. c.* p. 278. Allied to *Sycanus*; head slender, longer than thorax, anteocular much longer than postocular part; rostrum

slender, joint 1 shorter than 2; thorax unarmed, anterior lobe convex, or tuberculato-elevated on the disk; disk of scutellum tuberculate or spinose abdomen much widened, apical angles of segment 2 not prominent, unarmed; legs slender, rather long. Sp. *Sycanus generosus* and *pyrrholomus* (Stål.

Homalosphodrus, Stål, *l. c.* p. 278 = *Parsialus* (Stål, olim).

Agriosphodrus, g. n., Stål, *l. c.* p. 279. Allied to *Eulyes*; head much elongated, postocular and anteocular parts nearly equal in length; joint 2 of rostrum longest; joint 1 of antennæ about as long as head; hemelytra a little exceeding the abdomen; abdomen much dilated, dilated parts of segments umbonate, of last segment scarcely if at all produced; legs slender, anterior femora scarcely thickened. Sp. *Eulyes dohrni* (Sign.).

Ischnolestes, g. n., Stål, *l. c.* p. 268. Allied to *Dalyrta*; body very elongate, narrow; head elongate, with a spinule on each side behind antennæ, postocular part about one-half longer than anteocular; joint 1 of rostrum equal to or longer than 2 and 3 together; antennæ long, joint 1 longer than head, thorax, and scutellum; thorax slightly constricted in the middle, longer than broad, anterior lobe with 2 posterior spines, posterior with 4 spines; scutellum rounded at apex; hemelytra somewhat shorter than abdomen; mesostethium without lateral tubercles; last segment of abdomen lobed on each side behind the middle. Sp. *I. conspectus*, sp. n., Stål, *l. c.* p. 269, South Australia; *I. lobulatus*, sp. n., Stål, ibid., North Australia.

Cydnocoris, Stål, *l. c.* p. 274 = *Cutocoris* (Stål, olim). New sp. *C. crocatus*, Stål, *l. c.* p. 274, East Indies; *C. tagalicus*, Stål, ibid., Manilla; *C. russatus*, Stål, ibid., Japan.

Manicocoris, g. n., Stål, *l. c.* pp. 247 and 248. (See Table, p. 472.) Sp. *Cimex nigripes* (Linn.) and *Reduvius rufipes* (Fab.).

Agriocleptes, g. n., Stål, *l. c.* pp. 247 and 248. (See Table, p. 472.) Sp. *A. albo-conspersus*, Stål, *l. c.* p. 248 (= *Harpactor albosparsus*, Stål, olim), Brazil.

Agriocoris, g. n., Stål, *l. c.* pp. 247 and 249. (See Table, p. 473.) Sp. *Heniartes curvipes* (Sign.).

Sphodrolestes, g. n., Stål, *l. c.* pp. 248 and 249. (See Table, p. 473.) Sp. *S. vittaticollis*, sp. n., Stål, *l. c.* p. 249, North Brazil.

Sphodrocoris, g. n., Stål, *l. c.* pp. 251 and 261. (See Table, p. 474.) Sp. *Reduvius maculipennis* (Le P. & S.) and *Pirates guttatipennis* (Stål).

Cleptocoris, g. n., Stål, *l. c.* pp. 251 and 261. (See Table, p. 474.) Sp. *Pirates lugubris, maurus* (Stål), *balteatus* (Germ.), and *strepitans* (Ramb.).

Microsandalus, g. n., Stål, *l. c.* pp. 250 and 253. (See Table, p. 473.) Sp. *M. umbrosus*, sp. n., Stål, *l. c.* p. 253, North Australia.

Callisphodrus, g. n., Stål, *l. c.* pp. 251 and 258. (See Table, p. 474.) Sp. *Pirates decoratus, truculentus, ornatus*, and *arciger* (Stål); *Reduvius mutillarius* (Fab.), and *Callisphodrus patricius*, sp. n., Stål, *l. c.* p. 258, North Australia.

Macrosandalus, g. n., Stål, *l. c.* pp. 251 and 259. (See Table, p. 474.) Sp. *Peirates sulcicollis* (Serv.) and *Pirates albomaculatus* (Mayr).

Melanolestes, g. n., Stål, *l. c.* pp. 251 and 259. (See Table, p. 474.) Sp. *Pirates picipes* (H.-Sch.), *P. morio* (Erichs.), and *Rasahus picicornis* (Stål).

Brachysandalus, g. n., Stål, *l. c.* pp. 251 and 260. (See Table, p. 474.) Sp. *Pirates ephippiger* (White) and *fuliginosus* (Erichs.). New sp. *B. hellus*, Stål, *l. c.* p. 260, Melbourne; *B. furco*, Stål, ibid., Adelaide; *B. punctorius*, Stål, ibid., Melbourne; and *B. sexguttatus*, Stål, *l. c.* p. 261, Mysol.

Sphodromyttus, g. n., Stål, *l. c.* pp. 282 and 284. (See Table, p. 475.) Sp.

Zelus erythropterus (Burm.) = *Phemius rubripennis* (Mayr); *Reduvius frater*, *convivus*, and *semirufus* (Stål); and *S. erythromelas*, sp. n., Stål, *l. c.* p. 283, Manilla.

Catasphactes, g. n., Stål, *l. c.* pp. 284 and 287. (See Table, p. 475.) Sp. *Reduvius coprias* (Stål); and *C. pyrrhopterus*, sp. n., Stål, *l. c.* p. 288, Melbourne.

Sphedanolestes, g. n., Stål, *l. c.* pp. 284 and 288. (See Table, p. 475.) Sp. *Red. impressicollis* and *xanthogaster* (Stål) and *R. pulchellus* (Klug).

Graptosphodrus, g. n., Stål, *l. c.* pp. 284 and 288. (See Table, p. 474.) Sp. *Red. gulo*, *verecundus*, *saucius*, *gestuolus*, and *melanocephalus* (Stål); *G. jucundus*, sp. n., Stål, *l. c.* p. 289, New Guinea.

Pœciloclopius, g. n., Stål, *l. c.* pp. 284 and 289. (See Table, p. 474.) Sp. *Red. patagiatus* (Stål).

Biasticus, g. n., Stål, *l. c.* pp. 284 and 290. (See Table, p. 474.) Sp. *Red. impiger* (Stål).

Graptolestes, g. n., Stål, *l. c.* pp. 283 and 290. (See Table, p. 474.) Sp. *G. civilis*, sp. n., Stål, *l. c.* p. 290, Cambodia.

Graptoclopius, g. n., Stål, *l. c.* pp. 283 and 291. (See Table, p. 474.) Sp. *Red. helluo* (Stål).

Dinocleptes, g. n., Stål, *l. c.* p. 284. (See Table, p. 475.) Type *Red. inops* (Stål).

Agrioclopius, g. n., Stål, *l. c.* p. 285. (See Table, p. 475.) Type *Red. albonotatus* (Stål).

Cosmolestes, g. n., Stål, *l. c.* p. 285. (See Table, p. 475.) Sp. *Red. pictus* and *æthiopicus* (Stål).

Callilestes, g. n., Stål, *l. c.* p. 285. (See Table, p. 475.) Type *Evagorus perrisi* (Sign.).

Rocconota, g. n., Stål, *l. c.* p. 293. (See Table, p. 476.) Type *Repipta tuberculigera* (Stål).

Graptocleptes, g. n., Stål, *l. c.* p. 294. (See Table, p. 476.) Sp. *Myocoris gracilis* (Burm.), *Hiranetis flavidata*, *gastrica*, *fusco-apicata*, and *hæmatogastra* (Stål).

Spinda, g. n., Stål, *l. c.* p. 294. (See Table, p. 476.) Sp. *Repipta subinermis* (Stål); *S. trinotata*, sp. n., Stål, *l. c.* p. 297, Mexico.

Amaurosphodrus, g. n., Stål, *l. c.* p. 295. (See Table, p. 477.) Sp. *Myocoris bicolor* (Burm.) = *Evagoras nigricornis* (Stål) and *Hiranetis sanguineiventris* (Stål); *A. alboannulatus*, Stal, *l. c.* p. 297, New Granada (= *Zelus albomaculatus*, Stål, olim).

Cosmonyttus, g. n., Stål, *l. c.* p. 295. (See Table, p. 477.) Type *Myocoris nigriceps* (Burm.).

Cosmoclopius, g. n., Stål, *l. c.* p. 296. (See Table, p. 477.) Sp. *Harpactor pœcilus* (H.-Sch.) and *nigro-annulatus* (Stal).

Pyrrhosphodrus, g. n., Stål, *l. c.* p. 298. (See Table, p. 477.) Sp. *P. militaris* and *amazonus*, sp. n., Stål, *l. c.* p. 298, North Brazil.

Pindus, g. n., Stål, *l. c.* p. 296. (See Table, p. 477.) Sp. *P. vittaticeps*, sp. n., Stål, *l. c.* p. 299, North Brazil.

New species :—

Durganda fuscipes, Stål, Œfvers. Vet.-Akad. Förh. xxiii. p. 237, Manilla.

Sminthus limbaticollis, Stål, *l. c.* p. 238, Malacca.

Acanthaspis bimaculata, Stål, *l. c.* p. 241, Java; *A. signaticollis*, Stål, *l. c.* p. 242, Manilla.

Centrocnemis granulosa, Stål, *l. c.* p. 244, Malacca.

Ectinoderus nitidus, Stål, *l. c.* p. 245, Manilla.

Amulius longiceps, Stål, *l. c.* p. 246, Malacca; *A. malayus*, Stål, ibid., Siam.

Heniartes productus, Stål, *l. c.* p. 248, North Brazil.

Sirthenea amazona, Stål, *l. c.* p. 252, North Brazil; *S. obscura*, Stål, *l. c.* p. 253, New Holland.

Ectomocoris ochropterus, Stål, *l. c.* p. 256, East Indies; *E. cordiger*, Stål, ibid., North India.

Veleda aculeata, Stål, *l. c.* p. 264, North Australia.

Pristhesancus illustris, Stål, *l. c.* p. 266 (= *P. æneiventris*, Stål, olim), Batchian.

Endochus inornatus, Stål, *l. c.* p. 270, East Indies.

Gminatus atricornis, Stål, *l. c.* p. 271, North Australia.

Pnirsus lineativentris, Stål, *l. c.* p. 272, North Australia.

Evagorus sordidata, Stål, *l. c.* p. 273, Borneo, Sarawak.

Arcesius sanguinarius, Stål, *l. c.* p. 275, New Guinea.

Sycanus macracanthus, Stål, *l. c.* p. 276, Borneo, Sarawak; *S. dichotomus*, Stål, *l. c.* p. 277, Borneo.

Velinus fuliginosus, Stål, *l. c.* p. 280, Malacca.

Velinus satellitius, Stål, *l. c.* p. 281, Malacca.

Reduvius costalis, Stål, *l. c.* p. 285, Bengal; *R. aulicus*, Stål, ibid., Malacca; *R. mendicus*, *l. c.* p. 286, Malacca.

Reduvius desertus, Becker, Bull. Soc. Nat. Mosc. xl. 1. p. 114, Sarepta.

Nabis amœnus, Solsky, Horæ Soc. Ent. Ross. iv. p. 185, Astrachan.

Nabis tamaricis, Becker, Bull. Soc. Nat. Mosc. xl. 1. p. 110, Kirghise Steppes (= *Nabis viridulus*, Spin. ?).

Doldina bicarinata, Stål, *l. c.* p. 296, North Brazil.

Fitchia nigro-vittata, Stål, *l. c.* p. 296 = *F. aptera* (Stål, olim).

Repipta lepidula, Stål, *l. c.* p. 296, North Brazil.

Acanthiscium [sic] *haglundi*, Stål, *l. c.* p. 297, North Brazil.

Diplodus annulosus, Stål, *l. c.* p. 299, North Brazil.

Aristippus fenestratus, Stål, *l. c.* p. 299, and *A. fumosus*, Stål, *l. c.* p. 300, North Brazil.

Spiniger pyrrhomelas and *amazonus*, Stål, *l. c.* p. 300, North Brazil.

Scadra nigro-rufa, Stål, *l. c.* p. 301, Japan. (*Physorhynchus lanius*, Stål, also belongs to this genus.)

Mendis sanguinaria, Stål, *l. c.* p. 301, origin unknown.

Rhiginia immarginata, Stål, *l. c.* p. 302, Quito; and *R. amazona*, Stål, ibid., North Brazil.

Larymna atripennis, Stål, *l. c.* p. 302, Malacca.

Saldidæ.

Salda quadrilineata, sp. n., Jakowlew, Arbeiten Univ. Kasan, 1864, p. 115, Kasan.

Salda conspicua, sp. n., Douglas & Scott, Ent. M. Mag. iv. p. 93, pl. 1. fig. 5, Perthshire.

Hydrometridæ.

Halobates. Frauenfeld (Verh. zool.-bot. Ges. in Wien, xvii. pp. 456–460) notices the species of this genus, describes and figures the larva and male of *H. flaviventris* (Esch.), p. 459, pl. 12. figs. 3 & 4, its antenna (fig. 7), and the tarsus of the larva (fig. 9), indicates the characters of *H. micans* (Esch.),

and figures the antenna (fig. 5), and describes a new species. Frauenfeld refers to the statement of Eschscholtz that the anterior tarsi are triarticulate, the third joint being represented by the projection forming the inferior boundary of the notch containing the claws. In the author's opinion this view is erroneous.

Hydrometra costæ (H.-Sch.) and *H. odontogaster* (Zett.) are described as occurring in Britain by Douglas & Scott (Ent. M. Mag. iv. pp. 96–98).

Mesovelia furcata (Muls. & Rey) is described and figured as a British species by Douglas & Scott (Ent. M. Mag. iv. pp. 4–6, pl. 1. fig. 1). They say that it belongs to the group *Hebridæ*.

Wahnschaffe records the occurrence of *Velia currens* (Fab.) upon brackish water near Sülldorf. Berl. ent. Zeitschr. 1867, p. 192.

Halobates willerstorffi, sp. n., Frauenfeld, *l. c.* p. 458, pl. 12. figs. 1, 2, 6, 8, & 10, off Cape Frio.

Notonectidæ.

Douglas & Scott (Ent. M. Mag. iv. pp. 98–100) describe *Corixa præusta* (Fieb.) as a British species, and redescribe their *C. wollastoni* from mature examples.

Homoptera.

Marshall (Ent. M. Mag. iii.) has concluded his essay on the British species of Auchenorhynchous Homoptera, with a revision of the genus *Eupteryx* (Curt.) = *Typhlocyba* (Germ.). He also adds a few supplementary notes on species described in previous sections of his work.

Stridulantia.

Landois's observations (Zeitschr. für wiss. Zool. xvii. pp. 152–158, pl. 11. figs. 17, 18) on the singing-apparatus of the *Cicadæ* are particularly interesting, as demonstrating the incorrectness of the explanation of the singing of those insects given by Réaumur and since generally adopted, and at the same time bringing this phenomenon into relation with the buzzing of the Diptera. Landois describes the construction of the parts concealed by the large subabdominal plates of the male *Cicadæ*, and already noticed by Réaumur and others, and indicates that the so-called "timbale" of Réaumur cannot act in the manner described by him, as, instead of being moveable by muscular action, it is firmly attached to the wall of the metathorax. The true organ of sound, according to Landois, is the metathoracic stigma, which is of very large size and elongated form, and furnished throughout its length with two thin sounding-bands, which leave a very narrow slit between them. It is to the vibration of these bands during the escape of air from the tracheæ that the sound is primarily due; the more external organs merely serve to increase its power by their resonance.

Fulgoridæ.

Signoret publishes some observations by Rouget of Dijon on the occurrence of *Tettigometra læta* (H.-Sch.) on the lower surface of stones covering nests of *Tapinoma erraticum*. Bull. Soc. Ent. Fr. 1867, pp. lxxxiii–lxxxiv.

Marshall indicates (Ent. M. Mag. iii. p. 269) the characters of *Delphax bivittatus* (Boh.) and *D. thoracicus* (Stål) as additional British species, and describes the ♀ of *D. elegantulus* (Boh.).

Cicadellina.

Eupteryx. Marshall (Ent. M. Mag. iii. *ll. c.*) publishes descriptions of the British species of this genus, of which he recognizes 28. None of them are new.

Marshall also states (*l. c.* pp. 269–270) that his *Jassus 4-vittatus* is only a var. of *J. socialis* (Flor.), and records the occurrence in Britain of *Jassus ventralis* (Fall.) and *J. brevipennis* (Kirschb.).

Dorycephalus, g. n., J. Kuschakéwitsch, Horæ Soc. Ent. Ross. iv. p. 102. Body elongate, fusiform; head produced, vertex horizontal, forehead longitudinally excavated, clypeus oblong-quadrate, lora very broad, oval; ocelli very minute; hemelytra short, veins parallel, cells 0; legs subangulate, spinulose. Sp. *D. baeri*, sp. n., J. Kusch. *l. c.* p. 103, pl. 2. fig. 5, Orenburg.

Aphididæ.

Signoret & Balbiani have detected a singular instance of dimorphism in the young of *Aphis aceris* (Fab.). The larvæ of this species present two distinct forms:—a normal pubescent form; and a somewhat foliaceous form, having the head and abdomen furnished with curious veined leaflets on their margins, and the abdomen reticulated in a manner resembling the design of the plates on the back of a Tortoise. This form was described by Thornton as a microscopic object under the name of the "leaf-insect" or *Phyllophorus testudinatus*, and by Lane Clark as *Chelymorpha phyllophora*; Van der Hoeven substituted for these the name of *Periphyllus testudo*, both the other generic names having been previously employed. Signoret adopts the name of *Periphyllus testudinatus*. Some of the normal embryos present a few flattened scale-like hairs. The function of the foliaceous larvæ in the economy of the insect has not been detected. They contain no embryos. (See Signoret, Ann. Soc. Ent. Fr. 4ᵉ sér. vii. pp. 371–378, pl. 10. figs. A 1–4, *Periphyllus testudinatus*, and figs. B 1 & 2 the normal larva; also Balbiani & Signoret, 'Comptes Rendus,' lxiv. pp. 1259–1263).

Shimer (Proc. Acad. Nat. Sci. Phil. 1867, p. 2) proposes the formation of a distinct family, *Dactylosphæridæ*, intermediate between the Aphides and the Coccidæ, for some small species of which he forms a new genus, *Dactylosphæra*. The characters given for the family are as follows:—"Wings 4, carried flat on the back in repose. Antennæ few-jointed. Tarsi composed of one joint, terminated by 2 claws, and from 2 to 6 *digituli*. Honey-tubes none; otherwise resembling *Aphidæ*." The term "*digituli*" is employed by the author for some singular organs consisting of a stalk with a round head which project from various parts of the extremity of the tarsus.

Phylloxera (Fonsc.). Signoret (Ann. Soc. Ent. &c. 4ᵉ sér. vii. pp. 297–304) describes the general characters and habits of the insects of this genus, especially noticing the production by them of a sort of pellicle or shell, serving, as he thinks, for the protection of the ova. He indicates and describes 4 spe-

cies as belonging to it, namely :—*P. carya alba* (Fitch) ; *P. quercus* (Fonsc.) = *Vacuna coccinea* (Heyd.), p. 300, pl. 7. figs. 1–5 ; *P. castanea* (Hald.) and a new species. *P. longirostris* (Fonsc.) belongs to *Lachnus* (Kalt.) = *Dryobius* (Koch) and is the *Aphis roboris* (Linn.) = *longirostris* (Fab.) = *fasciatus* (Burm.).

Coret mentions that the *Aphides* (*A. rosæ*) from the roses cultivated in great numbers at Puteaux, take shelter during the winter in houses &c., and that they there attack the buds on certain potatoes stored under cover to supply the markets of Paris in May. The potatoes are rapidly spoiled. Fumigation with sulphurous acid only temporarily checked the mischief. Signoret remarks upon this statement, that it would be desirable to ascertain whether the species attacking the potatoes is really *Aphis rosæ*, and that the fumigation may have destroyed the viviparous *Aphides*, leaving their embryos ready for development, or that fresh winged *Aphides* might make their way into the store-rooms. Laboulbène and Guérin-Méneville remark upon the effect of the saccharine fluid dropped by the *Aphides* upon plants &c. in promoting the growth of minute fungi, and producing the black matter known as *fumagine*. The latter entomologist also refers to other damage caused by *Aphides*, and suggests the question whether these insects can live indifferently upon various plants. This question is answered in the affirmative by Giraud, who also indicates the means by which the Aphides are kept in check, and notices especially the parasitic Hymenoptera which he has observed. Bull. Soc. Ent. Fr. 1867, pp. lxxiii–lxxvii.

Signoret notices a gall produced by *Aphides* upon a species of *Lentiscus*. Lallemant and Abdullah-Bey mention similar galls occurring in Algeria and in Syria ; the last is known in Turkey by the name of *Caraube*, or *Carroba*, of Judea ; it measures 11–16 centims. in length, and is employed in fumigations for certain maladies of the chest. Bull. Soc. Ent. Fr. 1867, pp. lxx–lxxi.

M. C. Cooke notices the Aphidian galls of the elm, and states that the fluid occurring in them is used in Italy and France as a remedy for sore eyes. Ent. M. Mag. iii. p. 190.

Lubbock remarks, in his presidential address for 1867, on Balbiani's supposed discovery of hermaphrodism in the *Aphides*. Proc. Ent. Soc. 1866, pp. lv–lvii.

Dactylosphæra, g. n., Shimer, Proc. Acad. Nat. Sci. Phil. 1867, p. 2 (*vide suprà*). ♂. Anterior wing with 1 one-branched discoidal and a stigmatic vein ; posterior wing with no discoidal. ♀ apterous. Common to ♂ and ♀ :— Antennæ 3–4 jointed. Tarsi 6 digituli. Promuscis-sheath 4-jointed. Sp. *D. gibbosum*, sp. n., Shimer, *l. c.* p. 2, figs. B (tarsus) and C (sheath of promuscis), in galls on *Carya glabra*. Shimer also adds to his genus with doubt *Pemphigus vitifoliæ* (Fitch), of which he figures the tarsus (A 2), and the wings (D) ; but this insect has only 2 "digituli." Both species are described at considerable length, as also their habits &c.

Phylloxera scutifera, sp. n., Signoret, Ann. Soc. Ent. Fr. 4e sér. vii. p. 303, pl. 7. fig. 6, France, on the oak.

Aphis perforatus, sp. n., Signoret, Ann. Soc. Ent. Fr. 4e sér. vii. p. 379, pl. 10. figs. C 1, 2, and D 1, on the sycamore.

Forda dauci, sp. n., Goureau, Bull. Soc. Ent. Fr. 1867, p. lxxxix, lives upon the roots of the cultivated carrot, in company with *Formica flava*.

Schizoneura sparthanti, sp. n., Boisduval, Bull. Soc. Ent. Fr. 1866, p. lx, on Spanish broom near Paris.

Psyllidæ.

Anisostropha ficus (Linn.). Frauenfeld notices the habits and gives a detailed description of this species (Verh. zool.-bot. Ges. in Wien, xvii. pp. 801–803). From the occurrence of irregularities in the venation of the wings of this species, he takes occasion to remark upon the frequency of such irregularities among the *Psyllidæ*; the variation is almost always confined to one wing. Frauenfeld gives figures (*l. c.* p. 804) of wings belonging to the 3 genera *Anisostropha*, *Trioza*, and *Psylla*, showing the normal and abnormal venations.

Aleurodidæ.

Aleurodes. Frauenfeld (Verh. zool.-bot. Ges. in Wien, xvii. pp. 793–801) notices the occurrence of species of this genus in great abundance on certain plants in hothouses, and indicates the species described by various authors. Of these he cites 17, of which, however, *A. dubia* (Steph.) = *Coniopteryx tineiformis* (Curt.) and *A. gigantea* (Steph.) = *Con. aleurodiformis* (Curt.); *A. dubia* (Heeger nec Steph.) = *A. phillyreæ* (Hal.), with which *A. phyllicæ* (Bouché) is also probably identical. *A. cocois* (Curt.) is said not to belong to the genus. The species observed by the author in the hothouses of the Vienna Botanic Gardens is identified by him with *A. vaporariorum* (Westw.), and he gives a full description of it in its various stages (*l. c.* p. 798). He also describes a new species.

Aleurodes euphorbiæ, sp. n., F. Löw, Verh. zool.-bot. Ges. in Wien, xvii. p. 746, Vienna, on *Euphorbia peplus*.

Aleurodes jelinekii, sp. n., Frauenfeld, *l. c.* p. 799, on *Viburnum tinus* at Miramar.

Coccidæ.

Notes by Signoret on species of *Aspidiotus* and other *Coccidæ* will be found in Bull. Soc. Ent. Fr. 1867, pp. iii, xvi, xxx.

Giraud notices *Coccus festucæ* (Fonsc.) and *Aspidiotus quercicola* (Bouché) and their hymenopterous parasites. Bull. Soc. Ent. Fr. 1867, pp. lxxvii–lxxviii.

W. W. Saunders notices 2 species of *Coccus* which attacked the bulb of an orchid from New Granada. Proc. Ent. Soc. 1865, p. 116.

Targioni-Tozzetti (Comptes Rendus, lxv. pp. 246–247) gives the analysis of the wax of *Coccus caricæ*, with remarks upon other wax-giving species.

Coccus cryptus, sp. n., Kawall, Stett. ent. Zeit. 1867, p. 122, on the petioles of *Salix acutifolia*.

Anoplura.

Giebel publishes (Zeitschr. für die ges. Naturw. xxviii. p. 397) a list of the species of this group contained in the University Museum at Halle. He enumerates only 16 species. The notes, which are derived from Nitzsch's MS., include brief characters of *Hæmatopinus clavicornis* (Nitzsch) on *Merione*s, and *H. tuberculatus* (Latr.) on *Bos bubalus*.

Goureau (Insectes nuisibles, pp. 198–206) indicates the general natural history of the insects of this group, and describes the species which infest man and the principal domestic animals.

MOLLUSCA

BY

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A. *Works in progress.*

TROSCHEL, F. H. Das Gebiss der Schnecken zur Begründung einer natürlichen Classification. Vol. ii. part 2. Berlin, 1868 (December, 1867), 4to, pp. 49–96, pls. v–viii. (See 'Zool. Record,' ii. p. 241.)

Contains general observations on *Rhachiglossa*, and descriptions of 95 species of this division; the families and genera are arranged according to the results of the author's researches. We mention here only the families treated of in this part, and shall refer to the genera in the special part:—*Volutacea, Marginellacea, Fasciolariacea, Mitracea, Fusacea* (including *Buccinina, Neptunina, Cassidulina, Photina, Vasina*, and *Imbricarina*), finally *Nassacea*.

REEVE, L. Conchologia Iconica, continued by SOWERBY. Nos. 256–265.

Parts 256–261 are dated 1866, 262 & 263 1867; they contain the genera *Unio* (continuation), *Pyrazus, Lampania, Cerithidea, Tympanotonos, Leiostraca, Tellina, Pleiodon, Anodon*.

SOWERBY, G. B. Thesaurus Conchyliorum.

We have given in the last volume of the 'Record' (p. 161) the contents not only of part xxiv., but also of part xxv., which concludes the third volume.

PFEIFFER, L., and DUNKER, W. Novitates Conchologicæ. (See 'Zool. Record,' iii. p. 161.)

Section i. Land-Conchylien, by Pfeiffer. Parts 26–28, containing pp. 313–368, and plates 76–84.

Section ii. Meeres-Conchylien, by Dunker. Parts 11 and 12, containing pp. 91–106, and pls. 31–36.

BOURGUIGNAT, J. R. Mollusques nouveaux, litigieux ou peu connus. Fascicles 6–8. (See 'Zool. Record,' ii. p. 212.)

Parts 6 and 7 with pp. 173–222, pls. 29–34; part 8 with pp. 223–258, pls. 35–38.

RÖMER, Ed. Monographie der Molluskengattung *Venus*. Parts 5–11.

Parts 5–7, pp. 43–78, pls. 13–21, dated 1866; parts 8–11, pp. 79–128, pls. 22–33, 1867. (See 'Zool. Record,' ii. p. 288, and iii. p. 208.)

JEFFREYS, J. GWYN. British Conchology. Vol. IV. London, 1867, 8vo, pp. 467, with 9 plates, one of which is coloured. (See 'Zool. Record,' ii. p. 232.)

B. *Conchological Journals.*

Malakozoologische Blätter, herausgegeben von Dr. L. PFEIFFER. Vol. xiv., with 3 plates, and contributions from D. C. Agardh-Westerlund, Dr. W. Dunker, F. D. Heynemann, E. A. Lischke, Dr. E. v. Martens, Dr. L. Pfeiffer, Dr. R. A. Philippi, Dr. E. Römer, and A. Schmidt. Cassel, 1867, 8vo, 241 pages.

Journal de Conchyliologie, publié sous la direction de MM. H. CROSSE et P. FISCHER. Vol. xv., or, third series, tome vii. Paris, 1867, 8vo, 482 pages, with 13 coloured plates. Contributions by W. G. Binney, A. Brot, O. Debeaux, L. de Folin, J. B. Gassies, J. Gonzalez Hidalgo, J. Gwyn Jeffreys, J. Mabille, E. Marie, O. A. L. Mörch, A. Morelet, Baron Castello de Paiva, L. Pfeiffer, Souverbie, and N. Tib[illegible]

American Journal of Conchology. Vol. iii. 1867. Publication Committee—G. W. TRYON, jun., Fs. LEA, C. F. PARKER. Philadelphia, 1867, 8vo, 342 pages, 24 plates, partly coloured. Contains contributions from T. A. Conrad, A. O. Currier, W. M. Gabb, Th. Gill, S. S. Haldeman, S. B. Howell, O. A. L. Mörch, W. Harper Pease, J. H. Thomson, and G. W. Tryon, jun.

Annales de la Société Malacologique de Belgique, tome ii. Bruxelles, 8vo, 1866–67, pp. 108.

Another conchological journal, in the Italian language, has been announced in 1867, and was started at the beginning of 1868, by LESONA in Pisa, under the title 'Bullettino malacologico.'

C. *Separate Publications.*

BIELZ, E. ALB. Fauna der Land- und Süsswasser-Mollusken. Siebenbürgens. [Fauna of the land- and freshwater mollusks of Transylvania.] Second edition. Hermannstadt, 1867, 8vo, pp. 216.

BINNEY, W. G. Land- and freshwater Shells of North America. Part ii. *Pulmonata limnophila* and *thalassophila*. Washington, 1865, 8vo. (Smithsonian Miscellaneous Collections 143.) 161 pages, with numerous woodcuts. Part iii. *Ampullariidæ, Valvatidæ, Viviparidæ, Freshwater Rissoidæ, Cyclophoridæ, Truncatellidæ, Freshwater Neritidæ, Helicinidæ.* Washington, 1866, 8vo. (Smithsonian Mis-

cellaneous Collections 144.) 120 pages, with numerous woodcuts, 8vo.

Several additions and corrections to this publication have been published by the author in Journ. Conch. xv. pp. 427–432, under the title "Notes sur quelques espèces de Mollusques fluviatiles de l'Amérique du Nord."

Brot, A. Etudes sur les coquilles de la famille des Nayades qui habitent le bassin du Léman. (Association Zoologique du Léman, 1866.) Bâle et Genève, 1867, 8vo, 55 pages, 9 plates.

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Contains only the descriptions of 32, and figures of 30 species, brought home by the 'Novara' expedition, and recognized as new. The Rissoidæ have been examined by Schwartz von Mohrenstern, who gave a report of them in the 'Sitzungsberichte of the Academy of Vienna' in 1860. Some land-shells, collected by Hochstetter during the expedition, were described by L. Pfeiffer in his 'Malakologische Blätter,' in the same year. The latter are omitted in the work before us. The remainder of freshwater and marine shells have been examined by Prof. Dunker, who, with J. Zelebor, published the new species in the 'Verhandl. zool.-bot. Vereins in Wien' of 1866; as we have mentioned them in the 'Record' for that year, we have to notice here only the figures given, and a few really new Rissoids added by v. Frauenfeld.

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Teratology.

Sinistral specimens of the American *Helix elevata, alternata, thyroides, mitchelliana, fallax, hirsuta, inflexa, solitaria* are mentioned by Frank Daulte, Bland, and others, Am. Journ. Conch. iii. p. 104, of *Bulimus acutus* by Gassies, Malacol. de l'Aquit. p. 19, of *Pomatias crassilabris* by Guestier, Journ. Conch. xv. p. 17. Sinistral specimens in about equal number with dextral of *Nanina amphidroma* and most species of the group *Amphidromus*, genus *Bulimus*. Martens, Preuss. Exped. ii. pp. 223, 80, and 339–354. Two eyes on the right-hand tentacle in *Nassa nitida*. Jeffreys, Brit. Conch. iv. p. 350.

Contributions to Faunas.

a. *Land- and Freshwater Mollusca.*

1. *Europe.*

Färöer. According to the list given by Dr. Mörch there occur in these islands only 7 species of land- and 4 or 5 of freshwater shells, viz. *Arion ater*, *A. cinctus*, var. *hortensis*, *Limax agrestis* and *marginatus*, *Vitrina pellucida*, *Hyalinia alliaria*, and *Hygromia hispida*, *Limnæa peregra* and *truncatula*, *Bithinia tentaculata* (doubtful with regard to the locality), *Pisidium pulchellum* and *P. pusillum*, var. The latter was formerly considered to be a distinct species, *P. ferroënse*, by Dr. Mörch and Temple Prime, but is now reunited by the former with *P. pusillum*, which is generally spread through the northern half of Europe, so that not one species is peculiar to this group of islands. Naturhist. Forenings Vidensk. Meddelels. pp. 72–74, 94–100.

Sweden. A new list of the land- and freshwater mollusks of this kingdom is given by C. Agardh-Westerlund, Mal. Blätt. xiv. pp. 200–203, with interesting remarks concerning the northern limits of some species. *Helix harpa* and *Vertigo arctica* occur only in the northernmost parts, not southwards of 63°. *H. ruderata* and *Hyalina viridula* extend northwards to 68° at least, whereas *H. rotundata*, *H. pura*, *cellaria*, *nitidula*, and *alliaria* are not found beyond 59½° (Stockholm). *Planorbis corneus* and *Pl. complanatus* [*fontanus*] reach 60°—the former near the coast of the Baltic only, being absent in the inland and western provinces, as well as in Norway; *Limnæa glabra* to 59°, but only in the inland provinces; *Planorbis nitidus* to 58°; *Paludina contecta* [*vivipara*, Müll.] and *vivipara* [*fasciata*, Müll. = *achatina*, Drap.] exclude each other, never being found together in the same district; the former is the more southern species; and the limit between them is situated at about 58°. Mal. Blätt. xiv. p. 203. [Both are found near Berlin, but rarely in the same water.]

Hartman enumerates 42 terrestrial gastropods and 34 freshwater mollusks from the neighbourhood of Stockholm, Œfvers. K. Vetensk. Akad. Förhandl. Stockholm, 1866, pp. 381–394. This list is the more valuable as previous lists of Swedish land- and freshwater mollusks were made in more southern localities, viz. Lund, Götheborg, and Renneby, province of Blekinge, by Nilsson, Malm, and Westerlund. The more remarkable species of the list are:—*Limax maximus*, *Helix alliaria*, *hammonis*, *viridula*, *pura*, *crystallina*, *aculeata*, *strigella*, *hortensis*, *pomatia* (in a park), *lapicida* (rather common, but nowhere abundant; it is remarkable that *H. arbustorum*, *bidens*, and *Bulimus obscurus* have not been observed), *Pupa columella*, *substriata*, *alpestris*, *Balea perversa*, *Clausilia laminata*, *nigricans*, and *plicatula*, *Amphipeplea glutinosa*, *Planorbis corneus*, *Paludina achatina*, *Bithynia ventricosa*, *Neritina fluviatilis*, *Pisidium pulchellum*, *subtruncatum*, *pusillum*, *obtusale*, and *nitidum*.

Compared with the malacological fauna of the province of Nerike, which was explored some years ago by the same author, the number of species is nearly the same, ten species living near Stockholm being absent in Nerike, whilst 16 of Nerike are not found near Stockholm. Nerike is situated nearly in the same latitude, but far distant from the sea; its temperature is lower; but limestone is abundant, whilst it is very scarce near Stockholm; this is the reason why the mollusks of Nerike are not only somewhat more numerous in species, but much more so in individuals, than near Stockholm.

Holstein. C. M. Poulsen enumerates 59 species living near Flensburg,

and four others from the southern part of that duchy; among them are 7 species of *Hyalinia*, *Discus* [*Helix*] *lamellatus* and *aculeatus*, both spread throughout the Cimbrian peninsula, *Gonostoma obvoluta*, *Pupa edentula*, *substriata*, and *angustior*, *Balea perversa*, *Clausilia laminata*, *bidentata* [= *nigricans*], *pumila*, *ventricosa*, and *plicatula*; *Helix hortensis* nearly as generally spread as *nemoralis*; *Sphærium solidum* in the Eider together with *rivicola*, Naturh. Forenings Vidensk. Meddel. pp. 46–50.

Brandenburg. To the malacological fauna of this province have been added *Hyalina striatula* (Gray) = *radiatula* (Alder), *H. pura* (Alder), *Helix striata* (Müll.) = *costulata* (Ziegl.), *Buliminus tridens* (Müll.), *Clausilia biplicata* (Mont.), *Pupa substriata* (Jeffr.), and *Pupula fusca* (Walker). Dr. O. Reinhardt and E. v. Martens, Sitzungsbericht d. Gesellsch. naturf. Freunde in Berlin, 1867, pp. 20, and 26, 27.

Würzburg. Fifty species of terrestrial and 25 of freshwater mollusca are found living near Würzburg, on the upper part of the Main, according to Sandberger's list. The more interesting among them are:—*Limax cereus* (Held.), *Amalia marginata* (Drap.), *Daudebardia rufa* (Drap.), *Helix sericea* (Drap.), *candidula* (Stud.), *Buliminus detritus* (Müll.), *tridens* (Müll.), *Balea fragilis* (Drap.), 6 species of *Clausilia* and the same number of *Pupa*, *Cyclas rivicola* (Lam.), *Tichogonia polymorpha*. They represent the typical fauna of the triassic limestone-hills (Muschelkalk) of Middle Germany, which is peculiarly poor in freshwater shells, neither *Paludina*, nor *Planorbis corneus*, nor *Physa hypnorum* being found. Würzburger naturwissensch. Zeitschr. pp. 38–48.—*Helix hortensis* and *Clausilia biplicata* are the most common species.

Belgium. F. de Malzine enumerates 28 species of freshwater bivalves, 39 freshwater, and 86 land-gastropods as inhabiting the Belgian kingdom. Some of them are described as new species. *Helix aspersa*, *cantiana*, *carthusiana*, *caperata*, *variabilis*, *Pupa cylindrica* [=*umbilicata*], and *Cyclostoma elegans* give to the Belgian fauna rather a French or English than German character; the genus *Clausilia* is well represented by 8 species, *Pupa* by 5, and *Vertigo* by 6. Among the freshwater shells, *Amphipeplea glutinosa*, *Bithynia leachi*, *Hydrobia abbreviata*, *viridis*, and *similis* may be mentioned as species not generally spread through the neighbouring countries. *Unio margaritifer* inhabits the river Ourthe and some streams in the hilly country of the Ardennes. *Dreissena polymorpha* is to be found in the Meuse, Sambre, and Escaut; *D. cochleata* (Nyst) introduced into the port of Antwerp. Of brackish-water mollusks, *Tralia* [*Alexia*] *myosotis* and *Assiminea grayana* may be mentioned. The existence of *Testacella* within the Belgian kingdom is denied.

Eastern France. H. Drouet enumerates, in his list of the Mollusks of the French department Côte d'or, 11 species of slugs, 72 shell-bearing land-snails, 32 freshwater gastropods, and 22 bivalves. The following may be mentioned here:—*Geomalacus hiemalis* (new), *Vitrina major* (Fér.) and *annularis* (Venetz), *Succinea ochracea* (Botta) and *arenaria* (Bouch.), *Zonites nitens* (Mich.), *radiatulus* (Ald.), *purus* (Ald.), *Helix rupestris* (Drap.), *obvoluta* (Müll.), *aspersa* (Müll.), *strigella* (Drap.), *carthusiana* (Müll.), *montana* (Stud.), *cælata* (Stud.), *concinna* (Jeffr.), *fasciolata* (Poir.) = *candidula* (Stud.), *costulata* (Ziegl.), *intersecta* (Poir.), *cricetorum* (Müll.), *Bulimus detritus* (Müll.), *Chondrus tridens* and *quadridens* (Müll.), *Azeca tridens* (Pult.), *Clau-*

silia parvula (Stud.), *dubia* (Drap.), *plicatula* (Drap.), *rolphii* (Gray), *ventricosa* (Drap.), *Balea perversa* (L.), *Pupa avenacea* (Brug.) and *secale* (Drap.), *dolium* (Drap.), *doliolum* (Brug.), *cylindracea* (Da Costa) = *umbilicata* (Drap.), *triplicata* (Stud.), *Cyclostoma elegans* (Müll.), *Pomatias obscurus* (Drap.), and *septemspiralis* (Ratz.) = *maculatus* (Drap.), *Planorbis rotundatus* (Poir.), *Physa acuta* (Drap.), *Limnæa glutinosa* (Müll.) and *glabra* (Müll.), *Hydrobia viridis* (Poir.), *reyniesii* (Dupuy), *carinulata* (new), *brevis* (Drap.), *Valvata contorta* (Menke), *Unio sinuatus* (Lam.), *rhomboideus* (Schröt.) = *litoralis* (Drap.), *mancus* (Lam.), *Pisidium henslowianum* (Shepp.), *roseum* (Scholtz), *Cyclas rivicola* (Lam.), *Dreissena fluviatilis* (Pall.). The occurrence of *Helix sylvatica* (Drap.) and *Ancylus moquinianus* (Bourg.) within the department is said to be doubtful. Besides, the paper contains many interesting notices concerning the several species as well as the physical geography of the department, and, finally, a comparison with the neighbouring departments from a conchological point of view.

Lake of Geneva. Six species of *Anodonta* and one of *Unio* are critically described by Brot in the paper mentioned above (p. 487).

Transylvania. E. A. Bielz's fauna of the land- and freshwater mollusca of Transylvania is distinguished by exact descriptions, careful indications of localities, sound general remarks concerning the geographical distribution, and practical hints for collecting these animals. The first edition, published in 1863, was sold within a few years, which proves that the number of conchologists is increasing. The present second edition offers few alterations, which refer chiefly to the species of *Limacidæ* and the subgeneric divisions of the *Helicidæ*. *Amalia marginata* (Drap.), *Limax transilvanicus* (Heynemann), and *Helix schmidtii* (Ziegl.) are species of the second edition not mentioned in the first; on the other hand, *Limax variegatus* and *L. silvaticus* of the first edition ought to be erased. On the whole there are 155 species, 120 of which are terrestrial, and only 35 fluviatile. The genus *Clausilia* alone is represented by 34 species, 12 of which, together with 5 enumerated by the author under the genus *Balea*, constitute the interesting group of the so-called *Baleo-clausiliæ* (*Alopia*, Adams) quite peculiar to Transylvania, and chiefly occurring on Jurassic limestone. Some other more interesting species of this fauna are the following:—*Daudebardia transylvanica* (E. A. Bielz), *Vitrina plicosa* (E. A. Bielz), *Hyalina natolica* (Albers), *Helix solaria, triaria, bidens*, var. *major, fusca* (Mont., British and also in some parts of France, but not yet found in Germany), *H. bielzi* (A. Schmidt, allied to *H. cobresiana*), *vicina* (Rossm.), *banatica, æthiops* (M. Bielz, an aberrant form of *arbustorum*), *faustina, trizona, lutescens, instabilis, Buliminus reversalis* (E. A. Bielz, the whorls of some specimens going to the left, of others to the right; the same occurs in some species of *Baleo-clausilia*), *Pupa biplicata* and *truncatella, Planorbis septemgyratus* (Ziegl.), *Cyclostoma costulatum* (Ziegl.), *Bithynia troscheli* (Paasch) [=*leachi* of Sheppard, *ventricosa* of Leach and Gray], *Lithoglyphus naticoides* (Fér.), *Neritina transversalis* (Ziegl.), and *Pisidium cuneatum* (E. A. Bielz). Neither *Helix nemoralis* nor *hortensis* are found within Transylvania, they are represented by *H. austriaca*; likewise several other species rather generally distributed through Middle Europe are absent in this country: such are, *Arion ater, Helix obvoluta, lapicida, cobresiana, rufescens, ericetorum, candidula, Balea perversa, Clausilia nigricans, plicatula, par-*

vula, Cyclostoma elegans, Paludina fasciata, Neritina fluviatilis, Unio tumidus.

Croatia. Brusina, in his pamphlet noticed above (p. 487), enumerates a large number of titles of books referring particularly to the malacology of several provinces of Austria, and proceeds to give a list of 175 species, among which 6 *Melanidæ*, 6 species of *Neritina*, 4 of *Lithoglyphus*, 1 *Ammicola* and 1 *Paludinella*, 3 of true *Zonites*, 6 of *Helicella* [*Hyalina*], 36 of *Clausilia*, 43 of *Helix*, 3 of *Pomatias*. Decidedly southern forms are *Stenogyra decollata*, *Glandina algira*, *Helix olivieri*, *pyramidata*, *cincta*, &c. *Helix nemoralis*, *hortensis*, and *austriaca* are found within this province. *H. obvoluta*, very common in Southern Germany, is not mentioned, but *H. holoserica* and *personata*. Species peculiar to Croatia are *Helix cærulans* (Mhlfld.), *stenomphala* (Menke), *Zonites croaticus* (Partsch), &c.

Brittany. Taslé's catalogue of the mollusks of the department of Morbihan, Vannes, 1867–68, contains, among others, *Arion flavus*, *Limax arborum*, and *companyoi*, *Milax sowerbyi*, *Testacella maugei*, and *bisulcata* (the occurrence of the last is doubted by P. Fischer), *Zonites subglaber*, *Helix ptilota*, *Vertigo loroisiana*, *Physa taslei* (these 4 species described by Bourguignat as new), *Succinea debilis*, and *Ancylus strictus*.

South-western coast of France.—The "intralittoral" region (that is to say, a region, consisting of sand-downs and boggy marshes, between the left bank of the Garonne and the sea, as far as "la Baïse," which was almost unknown and inaccessible before the establishment of a railway) has been repeatedly explored by J. B. Gassies. The list of mollusks observed by him contains 35 land-snails and slugs, two submarine species (*Auricula* [*Alexia*] *myosotis* and *bidentata*), 19 freshwater gastropods, and 14 freshwater bivalves; some species are new. *Helix variabilis*, including *maritima* (Drap.), *H. pisana*, *H. revelata*, and *Bulimus acutus* are the most characteristic species; the two latter are almost entirely absent on the right side of the Garonne, which is a limestone soil. On the other hand, *Helix aspersa* follows in the intralittoral region the railway-stations where limestone for buildings is found, and lives scarcely on merely siliceous ground. The translucent species of land-snails, as *Zonites* [*Hyalina*] and *Succinea*, are numerous in species; and even of *Helix aspersa* and *pisana* there are translucent varieties. Two species of *Testacella* occur—*T. haliotidea*, var. *scutulum*, and *T. maugei*; the latter, together with *Succinea longiscuta* and *Helix revelata*, are examples of the Lusitanian maritime character of the fauna. On the other hand, it is strange to find *Helix aculeata* among decaying fir-trees and moss on the downs; one *Clausilia* (*nigricans*, Pult.), one *Pupa* (*umbilicata*, Drap.), and two species of *Vertigo* have been found. Among the freshwater shells, *Amphipeplea glutinosa*, *Limnæa glabra*, and a new *Hydrobia* may be mentioned.

Pyrenees. O. Debeaux has made new malacological researches in the valley of Barèges, and raised the number of 32 species, enumerated in the year 1853 by Saulcy, to 54, among which the genera *Limax*, *Vitrina*, *Zua*, and *Hydrobia*. *Arion albus* occurs with *A. rufus* and *ater*, but is only of half the usual size; *Vitrina elongata* (Drap.) and *V. pyrenaica* (Fér.) in the lower regions of the valley; *Helix nemoralis* in the woods of firs to a height of 1800 metres, smaller than in the lower regions; *H. cricetorum* ascends nearly to the same height, and is there also of smaller size and without bands, the higher region offering less supply of limestone for their shells. *H. nubigena* and

H. carascalensis are the most characteristic species of the region, ascending higher than the woods, the first rather "graminicole," the other living on rocks. *Pupa megachilos* (Rossm.) = *bigorriensis* (Charp.) common to a height of 1800 metres. *Clausilia laminata* (Mont.), *dubia* (Drap.), and *abietina* (Dupuy) in the region of beeches, 1200–1500 metres; *Cl. dubia*, but not *Cl. abietina*, found somewhat higher, to a height of 1600 metres. *Ancylus gibbosus* (Bourg.) common. *Hydrobia reynesii* (Dupuy) on stones and pebbles in springs and rivulets. *Pisidium casertanum* (Poli) common in one place, 1350 metres high. No *Neritina* could be found, neither the *Zonites olivetorum*, which latter is mentioned by Saulcy; but instead of this five other species of *Zonites* [*Hyalina*] were discovered.

Southern France. Some rather rare mollusks of the département du Hérault (Montpellier) are mentioned by PALADILHE, Revue Zool. pp. 42–53, as *Testacella bisulcata* (Risso), *Succinea ochracea* (Betta), *Zonites glaber* (Stud.), *Helix cemenelea* (Risso) = *galloprovincialis* (Bourg.), *H. lauta* (Lowe) = *submaritima* (Desmoul.), *H. ambielina* (Charp.), *H. trochlea* (Pfr.), *Planorbis lævis* (Alder), *Physa subopaca* (Lam.), *Amnicola confusa* (Frauenfeld), and some new species of *Hydrobia*, *Paladilhia*, and *Valvata*.

All the mollusks of the same department are enumerated by MOITESSIER:—*Arion* 3 sp., *Limax* 4, *Milax* 1, *Testacella* 2, *Vitrina* 1, *Succinea* 5, *Zonites* 11, *Helix* 42, *Bulimus* 6, *Ferussacia* 8, *Clausilia* 5, *Pupa* 14, *Vertigo* 7, *Cecilianella* 4, *Carychium* 2, *Alexia* 1, *Planorbis* 17, *Physa* 4, *Limnæa* 8, *Ancylus* 5, *Moitessieria* 3, *Cyclostoma* 1, *Pomatias* 2, *Acme* 1, *Vivipara* 1, *Bithynia* 1, *Hydrobia* 12, *Amnicola* 3, *Bugesia* 1, *Paladilhia* 6, *Valvata* 6, *Neritina* 3, *Sphærium* 3, *Pisidium* 5, *Unio* 4, *Anodonta* 4, *Dreissena* 1. Revue Zool. pp. 101–445.

Grecian archipelago. Fifteen species of *Helicidæ* occurring on the island Tinos (two of them new, but not described) are enumerated in a general account of this island by JOSEPH ERBER, Verhandl. zool.-bot. Gesellsch. xvii. p. 855. Remarkable among them are *Pomatias tessellatus* (Andr.) and *Glandina algira*.

MIGRATION AND ACCLIMATATION.

Dreissena fluviatilis (Pall.) [*polymorpha*] appeared in 1861 in the Loire near Orleans and Tours, and recently at Nantes, and in some smaller streams of France, and in October 1865 in the Rhone, near Avignon. J. Mabille, Journ. Conch. xv. pp. 108–110. P. Fischer adds some other particulars, referring its appearance in the Département du Nord to the year 1838, in the Scarpe and Canal de la Deule to 1844, in the Rhone to 1856 [?], and in the Garonne to 1866. Ibid. pp. 110, 111. The same *Dreissena polymorpha* has been observed in the kingdom of Würtemberg in the river Neckar at Heilbronn, by M. Drauitz, in the spring of 1867. Württemb. naturwiss. Jahreshefte, vol. xxiv. (1868) p. 44. O. A. L. Mörch persists in doubting whether this mollusk had not been living in Germany before 1820, regarding Sander's note (see Record for 1865, p. 217) as a sufficient proof. Ann. & Mag. Nat. Hist. Febr. 1867, xix. pp. 82–84.

Helix vermiculata and [*Leucochroa*] *candidissima* are said to have been successfully acclimatized at Jaulyonne, in Belgium, by Ch. Lallemant, Annal. Soc. Malacol. Belg. ii. pp. 13, 14. The acclimatation of *H. lactea*, however, in Perpignan, Southern France, as stated by Moquin-Tandon, is contradicted

by Bourguignat, Moll. Nouv. viii. pp. 233, 234, the French snail being regarded by him as a distinct species, *H. apalolena*.

2. *Eastern Asia.*

Mantchouria. Our knowledge of the land- and freshwater shells of this country, which commenced in the year 1859 by the valuable publication of Dr. Gerstfeldt, is now essentially advanced by that of Dr. L. v. Schrenck (see p. 488), both papers being published under the auspices of the Academy of St. Petersburg. Several new species are added, the determination of others is corrected, the geographical distribution of each carefully pointed out, and a great portion of the paper is devoted to the general discussion of this subject. The whole number of species known from that country is 55 (25 terrestrial and the others aquatic). Not less than 37 (17 terrestrial, 20 freshwater) are identical with European species; 8 others have been known before from China; 10 appear as yet to be peculiar to Mantchouria. The freshwater Pulmonata or Limnæidæ, 11 species, are European; the land Pulmonata common to Europe and Mantchouria are generally of small size, most of them advancing far towards the north, even to Lapland, Iceland, and Greenland. The Helices of middle or rather large size are peculiar and more closely allied to Chinese than to European species; the same can be said concerning the larger freshwater shells belonging to *Melania* and *Paludina*. Operculated land-shells are absent altogether. Among the freshwater bivalves the Chinese *Unio grayanus* and *Anodonta magnifica* and (*Barbula*) *plicata* attain to a remarkable size. Dr. v. Schrenck ascribes to the last the pearls which were for some time known to come from the Amur country.

Japan. The land-snails of the Japanese islands are treated of by V. Martens, Preuss. Exped. Zool. ii. pp. 9–36. Fifteen species of *Cyclostomacea*, 1 of *Helicina*, and 44 of *Helicea* are enumerated—some observed by the author himself, and described at length; others introduced into the Japanese fauna on the authority of Mr. A. Adams, who communicated the names to the author. The occurrence in Japan of four species of *Helix* and one of *Bulimus* is considered to be doubtful. A short historical account of our knowledge of Japanese land-snails is added. The prominent features of this fauna are the groups *Acusta* and *Camena*, in the genus *Helix*, the existence of several species of *Clausilia* and a *Cyclophorus* of middle size.

A list of Japanese *Cyclophoridæ* is given also by A. Adams, Proc. Zool. Soc. p. 314.

China. The Chinese land-snails are treated of by Von Martens, Preuss. Exped. Zool. ii. pp. 36–60. Six species of *Cyclostomacea*, 1 *Helicina*, 43 *Helicidæ* are hitherto known as coming from that empire. Typical for

Northern China is *Helix pyrrhozona*, found on the great wall by a member of the Prussian Expedition. Near Shanghai land-snails are scarce, on account of the scarcity of stone and woods; *H. ravida* (Bens.) is the most common. On the artificial rocks of a garden within the town lives *Clausilia shangaiensis* (Pfr.); near Canton, *Helix cicatricosa* (Müll.) and *Cyclophorus punctatus*, and at Hongkong the nearly allied *C. exaltatus* (Pfr.) are the more common land-snails. Eighteen species are pointed out as such which have been erroneously stated to come from China by several authors.

Paludina angularis (Müll.)=*quadrata* (Bens.), and *Cyrena fluminea* (Müll.) common at Shanghai; *Noraculina*, species allied to *constricta*, Bens., sold in the market of that town. Valves of *Barbata plicata* employed as measures in selling beans and flour. Martens, Preuss. Exped. i. pp. 160, 161.

Some land- and freshwater shells, collected by Jones Lamprey, are mentioned, and three of them described as new, by W. Baird and H. Adams, Proc. Zool. Soc. pp. 489–492, pl. 26. They belong to the genera *Helix*, *Melania*, *Anodonta*, *Unio*, and *Glauconomya*.

Siam. The Siamese land-shells are treated of by Von Martens, Preuss. Exped. Zool. vol. ii. pp. 61–86, partly from his own observations made at Bangkok and Petshaburi, partly from the collections of the late M. Mouhot, the late Sir Robert Schomburgk, and Viscount Castelnau. Twelve *Cyclostomacea* and 39 *Helicidæ* were hitherto known as Siamese. At Bangkok land-snails are very scarce, the country being too muddy; *Helix ptychostyla* is the most remarkable. On the limestone-hills of Petshaburi two of the most characteristic Siamese shells are common, viz. *Nanina distincta* (Pfr.) and *Cyclophorus lituus* (Martyn); in a cave near that town *Streptaxis mouhoti* (Pfr.) has been found. Of four species the Siamese habitat is regarded as doubtful.

Cochinchina. Some new species described by H. Crosse, Journ. Conch. xv. pp. 204–209.

Nicobar Islands. Seven new species of land-snails found by the naturalists of the Austrian expedition of the 'Novara,' and belonging to the genera *Helix*, *Streptaxis*, *Clausilia*, *Cyclotus*, *Hydrocena*, and *Helicina*, are described by Zelebor and Pfeiffer, Verhandl. zool.-bot. Gesellsch. Wien, xvii. 1867, pp. 805–808.

Indian archipelago. The principal portion of the second volume of the Zoology of the Prussian Expedition to Eastern Asia is devoted by Von Martens to a detailed account of the land-shells of the Indian archipelago, from Singapore to the Moluccas and Timor, combining the results of his own observations in the years 1860–63 with those of his researches in the Leyden Museum, the collection of Prof. Mousson in Zurich, and of the late Mr. Cuming. There are enumerated:—*Opisthoporus* 8 sp., *Pterocyclos* 5, *Cyclotus* 19, *Cyclophorus* 21, *Leptopoma* 8, *Alycæus* 4, *Megalomastoma*, *Rhaphaulus*, *Pupinella*, and *Pupina* together 12, *Omphalotropis* 4, *Truncatella* 4, *Diplommatina* and *Paxillus* 3, *Helicina* 8, *Vaginulus* 5, *Philomycus* 1, *Parmarion* about 3, *Helicarion* 10, *Nanina* 47, *Hyalina* 1, *Trochomorpha* about 14, *Patula* 3, *Helix* 66, *Bulimus* 21, *Buliminus* 5, *Cionella* 2, *Stenogyra* 8, *Clausilia* 12, *Pupa* 2, and *Succinea* 6 sp., many

of them including several varieties which have been regarded as species by others. Thirty-nine other species are pointed out as such which have been indicated by some authors as found within these limits, but as yet cannot be received into this fauna, the statement being either evidently wrong or subject to serious doubt. Of all species observed by the author either during his voyage or afterwards in European collections, original Latin descriptions are given, similar to those by Dr. Pfeiffer in his monographs; the measurements are added, not only of one individual, but of the extreme forms which have been examined (for example, of the longest and shortest, the most slender and stoutest), in order to ascertain the extent of variation occurring in the same and in different localities. Peculiar care has been bestowed on the exact statement of the localities for each species. At the end of the volume, pp. 400–430, some tables and general remarks concerning the distribution of land-shells in the Indian archipelago, Siam, China, and Japan are given. At the first glance it would appear that the eastern and western parts of the archipelago are very different in this respect. In the Moluccas the species are very similar to, and the genera and subgenera identical with, those of New Guinea, some few and small species only being common to the western half—for example, *Helix winteriana*, *Trochomorpha planorbis*, and some species of *Stenogyra*. The characteristic and exclusive features of the *western* half are large, brown-coloured species of *Cyclophorus*, large, brown, distinctly sculptured *Naninæ*, and large *Bulimus*, varying individually from right to left; of the *eastern* half, smooth, variegated, often conical *Naninæ*, rather large, richly painted *Helix*, viz. the subgenera *Chloritis*, *Obba*, *Planispira*, *Papuina*, *Phania*, and *Albersia*. But it is not possible to trace a geographical line of demarcation between these two faunas. Sumatra has many species in common with Malacca and western Borneo, others with Java; and these four countries are the headquarters of the western or Indo-Malayan fauna. In western Borneo many *Cyclostomacea* with tubes at or near the aperture are found, connecting this island rather with the Transgangetic mainland; but in the same part of Borneo several subgenera characteristic of the eastern half of the archipelago begin to make their appearance. In Celebes and the islands situated east of Java to Timor both faunas are much mixed, and in the latter accompanied by Australian, in Celebes by Philippine representatives. From the south-western half of Borneo only one land-shell is at present known; of Celebes two points only have been explored, the northern and the southern extremities, Manado and Macassar; not one species of land-shells has been found at present to be common to these two localities. As in Europe, the land-shells of the plains near the sea-shore have a wide geographical distribution, and are generally fewer in

number, as regards species and individuals, than the freshwate shells; and one must travel to the hilly and wooded regions of the interior to find more peculiar and rare land-shells; this is the case also in Java, Sumatra, and Borneo, in Siam and China, but not on the rocky south coast of Java and on the small volcanic islands of the Moluccas. Limestone-hills yield generally a great number of individuals (Kupang in Timor, Petshaburi in Siam), and often also very peculiar species—so, for example, those at Maros near Macassar.

The *Limnæacea* of Eastern Asia are reviewed by Von Martens; he enumerates from Japan 3 *Planorbis* and 1 *Limnæus*; from China 6 *Planorbis* and 3 *Limnæus*; from Siam 2 *Planorbis* and 1 *Limnæus*; from the Philippines 1 *Planorbis*, 1 new *Physa*, 1 *Amphipeplea*, and 1 *Limnæus*; from the Indian archipelago (Java, Sumatra, Celebes, and Timor) 3 *Planorbis*, 1 *Physa*, 1 or 2 *Limnæus* exhibiting numerous varieties. The *Limnæacea* of Japan and China are generally similar to those of Europe, only the Chinese *L. pervius* is a somewhat peculiar form; the characteristic Indian type of *Limnæus*, exemplified by *L. luteolus* (Lam.), *bulla* (Bens.), and *cerasum* (Troschel) of British India, is also spread over the Transgangetic peninsula and the Indian archipelago, but of smaller size; the equally characteristic *Planorbis indicus* (Bens.) extends from British India to Siam and Cochinchina: but on the islands of the archipelago smaller species only, more resembling the European forms, have hitherto been found; one of them, *Pl. compressus* (Hutt.), appears to be very widely spread, specimens from Japan and China exhibiting no constant differences from those of Java and Celebes. *Physa*, as far as is known at present, is represented in the eastern part of the archipelago only, *Amphipeplea* only in the Philippines. Not one species of this family is as yet known from the Moluccas, except, on the authority of Lesson, *Physa moluccensis*. [The Recorder may add that he has since received the *Ancylus baconi* (Bourg.), a species of British India, also from the Philippines.]

The *Unionidæ* or *Najadea* of Malacca, Sumatra, Borneo, Java, and the Philippines are enumerated by Von Martens, Mal. Blätt. xiv. pp. 10–17:—two species of *Anodonta*, two of *Alasmodonta*, and eleven of *Unio*, some others being regarded as subspecies or synonyms. Not one is known from Celebes, Timor, or the Moluccas.

Philippines. Von Martens gives a list of land-shells found in the islands Luzon and Mindanao by members of the Prussian Expedition, and a second richer list of species collected by F. Jagor in that archipelago, and presented to the Berlin Museum. Some observations concerning the living animals, and a review of the systematic arrangements of the species belonging to the genus *Cochlostyla*, which is quite peculiar to the Philippines, are added. Preuss. Exped. Zool. ii. pp. 87–98.

3. *Australia and Polynesia.*

Australia. Some new land-shells described by Cox, Proc. Zool. Soc 1867, pp. 39 and 722; he promises to publish a work in which all the Australian land-shells will be described and figured.

New Caledonia. Some new land-shells described by J. B. Gassies, H Crosse, and E. Marie, Journ. Conch. xv. pp. 61–63, 179–194, 293, 312–317, 433–437.

4. *Africa.*

Madeira. Paiva's monograph of the land- and freshwater mollusks of this island, written in Latin, contains:—1 *Arion*, 4 *Limax*, 2 *Testacella*, 4 *Vitrina*, 92 *Helix*, 2 *Bulimus*, 11 *Achatina*, 25 *Pupa*, 1 *Balea*, 3 *Clausilia*, 1 *Limnæa*, 1 *Physa*, 1 *Ancylus*, 1 *Planorbis*, 1 *Melampus*, 1 *Marinula*, 1 *Pedipes*, 2 *Alexia*, 4 *Craspedopoma*, 1 *Truncatella*, 1 *Hydrobia*, 3 *Rissoa*, 1 *Assiminea*, 1 *Pisidium*, thus adding to the monograph of the late Albers (published in 1854) 1 *Limax*, 2 *Vitrina*, 30 *Helix*, 4 *Pupa*, 1 *Physa*, 1 *Planorbis*, 2 *Craspedopoma*, and 1 *Pisidium*, beside the submarine genera which were not included by Albers. Most of these additions have been described within the last years by the author in Pfeiffer's 'Malakologische Blätter' and Crosse's 'Journal de Conchyliologie.'

Some remarks concerning the land-mollusks of this island are to be found in Von Martens's zoological report of the Prussian Expedition. In the lower warm and dry region are found the types most peculiar to this island, as *Helix undata, nitidiuscula*, and *polymorpha*; in the upper moist and wooded region occur the European genera *Limax, Vitrina, Hyalina, Pupa*, and *Clausilia*, together with the rather peculiar genus of *Cyclostomidæ, Craspedopoma. Stenogyra decollata* has been found only near the town of Funchal, and is probably introduced from Europe. Freshwater shells are rare, *Limnæus truncatulus* and *Ancylus aduncus* have been found by the Recorder, *Planorbis glaber=lævis* by Mr. Johnson. *Auriculidæ* occur only near the sea, *Pedipes afer* even on rocks within reach of the waves, in company with *Litorina*. Preuss. Expedit. Zool. Theil, vol. i. pp. 11–13, 14, and vol. ii. pp. 1–5 and 395.

Abyssinia. Several mollusks inhabiting the lake Tzana, are indicated by Von Martens, Mal. Blätt. xiv. pp. 17–20; they are two species of *Unio*, *Paludina abyssinica* (see Zool. Record, iii. p. 185), *P. unicolor* (Olivier), and an undetermined *Corbicula*.

Mauritius. Fifteen new land-shells from this island, collected by Geoffroy Nevill, described by H. Adams, Proc. Zool. Soc. pp. 303–307.

5. *Tropical America.*

Rio Janeiro. An account of some land-snails living near Rio Janeiro is given by Von Martens, Preuss. Exped. Zool. ii. pp. 6–8.

Peru. Thirty-four new Peruvian land-shells, described by R. A. Philippi, Mal. Blätt. xiv. pp. 65–79 and 194, 195, will be mentioned hereafter.—Twelve land-shells collected by Mr. Thamm in the eastern part of Peru, within the system of the Amazons river, are indicated and partly described by Von Martens, Mal. Blätt. xiv. pp. 133–146; among them is *Clausilia adamsiana* (Pfr.), the locality of which was not known before, and some new *Bulimus*.

Cuba. Arango gives a new list of the land- and freshwater mollusks, arranging the synonyms alphabetically. It contains:—*Cyclostoma* [including *Chondropoma, Cistula*, &c.] 186 species, *Cyclotus* 2, *Megalomastoma* 11, *Truncatella* 10, *Helicina* 80, *Proserpina* 2, *Melampus* 5, *Pedipes* 1, *Plecotrema* 1, *Blauneria* 1, *Leuconia* 2, *Helix* 85, *Bulimus* 3, *Macroceramus* 35, *Pupoides* [*Leucochila*] 1, *Melaniella* 5, *Balea* 1, *Pseudobalea* 1, *Stenogyra* 14, *Spiraxis* 2, *Achatina* [*Liguus*] 2, *Oleacina* 13, *Streptostyla* 3, *Subulina* 6, *Euspiraxis* 1, *Cæcilianella* 2, *Pupa* 16, *Vertigo* 3, *Cylindrella* 89, *Succinea*

7, *Vaginulus* 2, *Limnæa* 2, *Physa* 3, *Planorbis* 8, *Ancylus* 4, *Gundlachia* 3 (two of which not known to the author), *Poeyia* 1, *Ampullaria* 3, *Paludina* 1, *Paludinella* 2, *Amnicola* 2, *Melania* 6, *Neritina* 4, *Cyrena* 1, *Sphærium* 1, *Pisidium* 2, and *Unio* 2 species. Repert. fisico-nat. de Cuba, ii. pp. 73–90.

A new Cuban *Cyclostoma* is added by Pfeiffer, Mal. Blätt. xiv. pp. 209–211.

Some new land-shells from the Bahama Islands, collected by Dr. Bryant and W. Miller, are described by Pfeiffer, Mal. Blätt. xiv. pp. 126–130, and 165, 166.

6. *North America.*

Mr. Tryon's monograph of the terrestrial Mollusca of the United States, which is continued in the Am. Journ. Conch. vol. iii., contains an interesting account of their distribution. The most characteristic features of North-American *Helix* consist in some nearly allied and perhaps too minutely distinguished groups (called genera by Tryon), viz. *Ulostoma, Mesodon, Holotrema, Triodopsis, Isognomostoma,* and *Stenotrema,* with 46 North-American species. The groups *Dædalochila* and *Polygyra,* with 32 species, are represented chiefly in the Southern States from Mexico and Texas to Florida and Georgia; but some species, for example *D. leporina* (Gould), advance as far northwards as Indiana and Illinois. Out of 25 *Orthalicidæ,* the two species of *Liguus,* the single species of *Orthalicus,* and four *Bulimulus* are limited to Florida, or rather extend from the West-Indian islands to this peninsula. *Bulimulus dealbatus* (Say) is the only one occurring on the mainland east of the Rocky Mountains and east of Texas, viz. in North Carolina, Alabama, Missouri, and Arkansas. All the rest, viz. 17 species of *Bulimulus,* belong to Texas, California, or Mexico. Of the genus *Pupa* only the subgenera *Pupilla* and *Leucochila,* as well as the genus *Vertigo,* are represented, each by several species peculiar to North America, and spread throughout the mainland. *Zoogenetes* is also truly North American; but *Strophia, Macroceramus, Melaniella, Opeas, Cylindrella,* and *Veronicella* are West-Indian types, extending with some species to Florida—*Cylindrella* and *Macroceramus* also to Texas. *Zua subcylindrica* [*lubrica*] is a circumpolar species extending in North America from New England and the Middle States to the Lake of the Woods and the Western Territories. *Zoogenetes,* with one species, *harpa* (Say), is boreal from Maine to Iowa. [It occurs also in Northern Sweden, and is therefore circumpolar.] *Acicula acicula, Rumina decollata,* and some *Limax* are introduced from Europe. Am. Journ. Conch. iii. pp. 298–317.

Binney's publications on land- and freshwater shells of North America (Smithsonian Collections, Nos. 143 and 144, see above p. 486) have the object of collecting in a concise form the whole of our knowledge concerning the North-American freshwater

Gastropods (except the *Melaniidæ*) to January 1864. The chief characters of the genera and species are pointed out and illustrated by woodcuts; in many cases the original description and figure are copied: the geographical distribution is noticed.

Prime's monograph of the American *Corbiculidæ* (Smithsonian Collections, No. 145) is made up in a similar manner; so that these works, together with Tryon's papers (in the 'American Journal of Conchology') on the North American *Melaniidæ* and land-snails (see 'Record' for 1865, pp. 253, 254, and 1866, p. 171), will form a practical text-book of North-American extra-marine conchology, containing illustrations of all known species. We hope that also the *Unionidæ* will be treated, perhaps by Mr. Lea himself, in the same manner.

According to these two papers, the genus *Limnæa* is represented in North America by 31 species, *Physa* and *Bulimus* by 29, *Planorbis* and *Segmentina* by 29. *Ancylus* with *Acroloxus* by 20, *Valvata* by 6, the *Viviparidæ* [genus *Paludina*] by 16, the freshwater *Rissoidæ* [gen. *Hydrobia* in its wider sense] by 29 species. *Neritina* has only one very small species on the mainland, *N. showalteri* (Lea), discovered by Showalter in the Coosa River, Alabama [the operculum and animal are not known]; some other species are Floridan and Californian. *Ampullaria* is represented by one species, occurring only in Georgia and Florida. *Pompholyx* and *Carinifex* are peculiar to California; *Gundlachia* is represented by one species in the Eastern States (found by W. Stimpson in the Potomac), and by another in California. The operculated land-shells are very few in number. *Helicina orbiculata* extends from Tennessee to Florida, and from Texas to Georgia; some other species occur on the shores of the Caribbean sea; *Helicina occulta* (Say) is excluded as being found in a fossil state only (postpleiocene). *Chondropoma dentatum* is found in Florida only, *Truncatella* in Florida and California. Of the *Auriculidæ*, *Carychium exiguum* is spread through New England, the Northern and Middle States, South Carolina, Arkansas, and Texas, *Melampus bidentatus* along the sea-coast from New England to Texas. *Alexia myosotis* is probably introduced from Europe into Nova Scotia and Rhode Island; some other *Auriculidæ* are West-Indian species, reaching Florida; *Pedipes* is represented by one species, *lirata* (Binney), in California. Particular care has been taken by the author to eliminate doubtful, bad, and pseudo-American species.

A large number of species of *Unionidæ*, *Melaniidæ*, &c., the diagnoses of which were published in the years 1862 and 1863 in the Proceedings of the Academy of Nat. Sci. in Philadelphia by Is. Lea, are fully described in the sixth volume of the Journal of the same society, part i. (published July 1866).

Some new freshwater shells from Michigan are described by A. O. Currier, Am. Journ. Conch. iii. pp. 112, 113.

New England. The land-snails of New England are treated of once more, and this time in a more popular manner, by E. Morse, American Naturalist, vol. i. *Helix albolabris* is taken as an example for describing and illustrating the anatomy and terminology of land-snails and their shells; the other species

are briefly described and all illustrated by woodcuts. *Helix hortensis* and [*Hyalina*] *cellaria* are the only two species acknowledged to be identical with European; the former is stated to be found in great abundance on certain "most uninhabitable" islands on the coast of Maine, and also on the lower parts of Cape Cod and Cape Ann, as well as in Canada and Nova Scotia; *H. cellaria* in cellars and gardens. Both are supposed to have been imported from Europe through the medium of commerce. *Vitrina limpida*, *H. chersina* and *minuta* are distinguished as species from the nearly allied European forms.

Labrador. A. S. Packard enumerates thirteen species of land-snails inhabiting Labrador, including those which were collected at the Mingan Islands by the Anticosti Expedition. They are:—*Limax agrestis* (L.), *Vitrina angelicæ* (Möller), *Conulus fabricii* (Möller), *Hyalina arborea* and *chersina* (Say), *Helix striatella* (Anthony), *Zoogenetes harpa* (Say), *Zua lubricoides* (Stimps.), *Pupa badia* (Adams) and *hoppii* (Möller), *Succinea obliqua* and *avara* (Say), *S. verrillii* (Bland). Freshwater shells only two—*Pisidium steenbuchii* (Möller) and *Alasmodonta arcuata* (Barnes), the latter also very abundant in the streams of Newfoundland. Mem. Bost. Soc. Nat. Hist. i. pp. 280, 289, 290.

California. For Cooper's paper on the Californian Helices, see the special part of this Record.

b. *Fauna of brackish water.*

Blanford's list of estuary shells collected in the delta of the Irawady is a most valuable contribution to our knowledge of those mollusks which live near or on the borders between fresh and salt-water—a rather distinct fauna, to which the Recorder has called the attention of malacologists in some previous papers (Troschel's Archiv. f. Naturgeschichte, 1858, and Pfeiffer's Mal. Blätt. x. 1863). Mr. Blanford says that the fauna and flora of the Irawady appear to be twofold:—*First*, further from the sea, where the water is more or less brackish, and the creeks are mostly narrow and deep, with steep banks, which are covered at high water and bordered by an unbroken belt of salt-swamps. There live several species of *Neritina*, subgen. *Dostia*, *Tectura fluviatilis* (n.), *Modiola emarginata* (Bens.), *Martesia fluminalis* (n.), *Sphenia perversa* (n.), *Scaphula deltæ* (n.); a species of *Teredo* perforates the dead trees; the salt swamps are peopled by *Auricula judæ*, *Cyrena bengalensis* (Lam.), the botanist finding the high-growing *Bruguierea*. *Secondly*, lower down, where the creeks are broader, the belt of salt swamps narrower, and a broad shelving muddy shore succeeds, where *Avicennia* and *Nipa* are characteristic trees, the following mollusks are found:—*Potamides*, several species, *Litorina melanostoma* (Gray) and *scabra* (L.), *Assiminea rubella* (n.), *Amphibola burmana* (n.), *Plecotrema cumingiana* (n.), *Haminea tenera* (A. Ad.), *Stenothyra monilifera* (Bens.), *Arca granosa* (L.), *Nassa planicostata* (A. Ad.), and *Columbella duclosiana* (Sow.). Mr. Blanford confirms an observation made some years previously by the Recorder that *none* of the eastern *Auriculidæ* (*Auricula*, *Cassidula*, *Melampus*,

Pythia, Plecotrema) are terrestrial, all belonging to the estuary fauna, living in places covered by salt or brackish water at every tide.

Some shells found in brackish water at Yokohama are mentioned by v. MARTENS, Preuss. Exped. Zool. i. p. 138.

The half-salted water in the so-called inner "Skär-gard" near Stockholm is inhabited by the following mollusks, which in other localities are found in pure fresh water:—*Limnæa auricularia, L. limosa*, var. *baltica, L. palustris*, var. *fusca, Physa fontinalis, Planorbis corneus, Paludina vivipara* [=*achatina*], *Bithynia tentaculata, Neritina fluviatilis, Pisidium nitidum*, and *Anodonta anatina*. HARTMAN, Œfvers. K. Vetensk. Akad. Förhandl. 1866, p. 390.

A new species of the genus *Assiminea, gallica*, has been described as being found in the interior of France at salt-springs in the départements de l'Ain et du Jura, by PALADILHE, Revue Zool. xix. p. 40. This would be the first example of a saltwater mollusk being found in an inland saline locality, unless a shell very nearly allied to *Hydrobia ventrosa* (Mont.), and found dead in the salt lake at Mansfeld, Prussian Saxony (Martens, Troschel's Archiv für Naturgeschichte, xxiv. 1858, p. 174), be taken as another instance. It is, however, desirable that the determination of the genus of the French shell may be confirmed by positive observation of the position of the eyes and of the radula.

c. *Marine Mollusca.*

1. *European Seas.*

The fourth volume of Mr. J. GWYN JEFFREYS's 'British Conchology' (see Zool. Record, ii. p. 232) contains the continuation of the Gastropods to the *Bullidæ* inclusively; the rather difficult families of the *Rissoidæ, Pyramidellidæ*, and *Pleurotomidæ* are worked out with the greatest care, this part containing much new information with regard to European species generally, so that the work must be consulted by every one who is engaged in the study of this subject. We are glad to hear that the author has since paid once more a visit to the shores of the Mediterranean, in order to ascertain the validity and synonymy of those species of the families mentioned which hitherto have been regarded as peculiar to that sea. It would be difficult to select and to enumerate all the important results arrived at by the author's most laborious and acute researches; but the Recorder is anxious to impress on the minds of all conchologists that this volume also contains a large stock of personal observations concerning the living animals, their habits, mode of feeding, bathymetrical and geographical distribution, the fruits of many years of exploration on shore and in dredging-expeditions. To this volume, as to the preceding, a table is appended, showing at one glance the more northern or southern distribution of each species in Europe, the extra-European localities, and its presence or absence in the Upper Tertiary beds.

Färöer. MÖRCH enumerates 106 marine species, most being identical with those of Scotland, even in their varieties. The

species which are not British, and do not extend to the south of the Färöers, are *Natica affinis* (Gmel.), *Lepeta cæca* (Müll.), and the pelagic *Clio pyramidata* (Linné), but they belong to the shell-fauna of the British Crag. On the other hand, there are 25 species which inhabit the Färöers, but neither Iceland nor Greenland—among them the genera *Cypræa, Marsenia, Cochlodesma, Tellina, Psammobia, Solen, Pectunculus, Lucina,* and several of the most common German species, as *Trochus ziziphinus, T. umbilicalis, Patella vulgata, Chiton marginatus, Venus striatula, Pecten opercularis.* Dr. Mörch gives an account of 18 scientific men who have contributed, by personal researches or original descriptions, to the knowledge of the malacological fauna of the Färöers, beginning with Olaus Worm, 1655. According to the researches made by Prof. Steenstrup, in the summer of 1844, there may be distinguished three regions of depth,—first, the true littoral region, or that of *Balanus* and *Fucus,* exhibiting three species of *Littorina, Patella vulgata, Purpura lapillus, Chiton ruber,* &c.; secondly, the region of *Laminaria,* on which are found *Lacuna vincta* and *pallidula, Margarita helicina,* and *Patella pellucida,* but only rarely Nudibranchs; thirdly, the region of a depth of 15–25 fathoms exhibits principally some species of *Chiton* and small *Patellidæ.* Naturhist. Forenings Vidensk. Meddelels. pp. 69–110.

Shetland Islands. Gwyn Jeffreys, in his fourth dredging report, raises the number of Shetland marine mollusca to 338 species; among these there are recorded for the first time as Shetlandic *Terebratella spitzbergensis, Montacuta tumidula, Siphonodentalium lofotense, Cadulus subfusiformis, Rissoa proxima, Odostomia clavula,* and *Utriculus globosus*; the claims of *Rhynchonella psittacea* and *Leda pernula* as being recent British are supported. Other rare species, previously dredged on the eastern or northern coast, were found this year on the western coast also. *Natica catena* has been dredged in from 40–50 fathoms; in the considerable depth of 170 fathoms (greater than any previously examined in the British seas) were dredged 54 species, 16 of which were living, the shells of the usual, and some even of a brighter and darker colour than in average examples from a few fathoms depth (*Venus ovata* and *Eulima bilineata*). Ann. & Mag. Nat. Hist. 1867, xx. pp. 247–254.

Brittany. The more remarkable among the sea-shells of the department of Morbihan enumerated by Taslé are the following:—*Teredo malleolus, megotara,* and *bipinnata, Thracia pubescens, Mesodesma corneum, Tellina serrata, Cyprina islandica, Nucula tenuis, Terebratula caput serpentis* and *Megerlia truncata, Chiton cajetanus, Rissoa punctura, violacea, lilacina, proxima,* and *vitrea, Adeorbis subcarinatus* and *striatus, Eulima intermedia, Aclis fascaris, unica,* and *supranitida,* some species of *Eulimella, Chemnitzia,* and *Odostomia, Bullæa catena, scabra, Fusus gracilis, Triton nodiferus* and *cutaceus, Ocula acuminata,* and *Cassis sulcosa.*

Belgium. The marine fauna of this kingdom contains, according to the list of F. de Malzine, 55 species of Bivalves, no Brachiopod or Pteropod, only 40 Gastropods, and 2 Cephalopods. There may be mentioned as less common species, *Tellina proxima* (Brown), *striata* (Montagu), and *similis*

(Sowerby), *Syndosmya intermedia* (Thompson), *Donax politus* (Poli), *Ervilia castanea* (Montagu), *Mactra helvacea* (Chemn.), *Venus verrucosa* and *casina* (L.), *Circe minima* (Montagu), *Pilcopsis hungarica* (L.), *Fissurella reticulata* (Donov.), *Trochus zizyphinus* (L.), *montagui* (Gray), *tumidus* (Mont.), *Scalaria turtonis* (Turt.) and *clathratula* (Mont.), *Otina otis* (Turt.), *Natica montagui* (Forbes), *sordida* (Phil.), and *pusilla* (Gould), *Velutina flexilis* (Mont.), *Lamellaria tentaculata* (Mont.), *Bullæa aperta* (Lam.). Most of the marine shells have only been found on the beach, thrown up by the sea, especially after storms, and few specimens only. The absence of rocky littoral ground explains the small number of Gastropods contained in this fauna, the genus *Rissoa*, for example, being represented by one undetermined species only, which, moreover, has not been seen by the author himself.

Mediterranean. The malacological fauna of this sea has been the subject of two valuable works by MM. Weinkauff and Gonzalez Hidalgo. The former (see p. 488) gives a complete list of all the species known, with careful indication of the synonyms and the known localities; it is only to be regretted that he does not give short diagnoses, or figure the rarer or less-known species, which would have been of great use to the practical conchologist. On the other hand, the references to the literature and critical remarks on certain species are very numerous. He treats of the shell-bearing mollusks only, enumerates 701 Mediterranean species, namely 230 Bivalves, 12 Brachiopods, 440 Gastropods, 14 Pteropods, 3 Heteropods, and 2 Cephalopods.

Most of these species are generally distributed along the shores of the Mediterranean, their occurrence being ascertained chiefly on the coasts of Northern Africa, the Balearic Islands, Southern France, Liguria, Corsica, Naples, and Sicily, the Adriatic, Morea, and the Ægean archipelago. Several species appear to be limited to the northern coast of Africa, which has been especially studied by the author; and among them are some of peculiar interest, as *Cardium hians*, *Psammobia intermedia* (Desh.) and *weinkauffi* (Crosse), *Tellina lucida* (Desh.), and *Lithodomus aristatus* (Dillw.). *Lutraria oblonga* (Chemn.), *rugosa* (Chemn.), and *Pecten maximus* (L.) occur only in the outer parts of the Mediterranean, viz. Spain and Algeria. *Panopæa glycimeris* (Born) has been hitherto found in a few spots only of the shores of Sicily within the Mediterranean. The occurrence of the same species in other seas is carefully noted on the best authorities.

Gonzalez Hidalgo's (see p. 492) enumeration of the mollusks of the oceanic and Mediterranean coasts of Spain has been a desideratum long felt in the geography of European mollusks. His list contains :—

	Brachiopods.	Bivalves.	Gastropods.
Species common to both coasts....	3	106	117
Oceanic only	2	26	46
Mediterranean only	0	82	114
Total number	5	209	281

However, these numbers must be somewhat modified, inasmuch as several species found hitherto in Spain only on the Mediterranean coast live also on other parts of the Atlantic coasts of Europe—for example, *Chiton marmoreus*, *Pholas parva*, &c., in England; and *vice versâ*, some others known in Spain only from the oceanic coast have been found also in the Mediterranean—for example, *Solarium luteum*. Nevertheless the result is very interesting. The most remarkable species which appear to be confined within the Straits of Gibraltar are :—

Corbula mediterranea, *Tellina nitida* and *pulchella*, *Donax semistriatus*, *Tapes geographicus*, *Cardium erinaceus* and *oblongum*, *Chama gryphoides* and *gryphina*, *Mytilus minimus*, *Lithodomus lithophagus*, *Pinna nobilis*, *Pecten glaber* and *sulcatus*, *Buccinum* [*Pisania*] *orbignyi*, *Tritonium reticulatum*, *Fasciolaria lignaria*, *Columbella scripta*, several species of *Natica*, *Ovula carnea* and *adriatica*, *Rissoa auriscalpium* and *ventricosa*, *Vermetus gigas*, *Turbo sanguineus*, *Trochus richardi*, *fanulum*, *divaricatus*, *varius*, *Clanculus jussieui* and *cruciatus*, *Craspedotus limbatus*, *Patella costosoplicata*, *Chiton siculus*, and *Umbrella mediterranea*.

As oceanic species approaching the Straits of Gibraltar without entering the Mediterranean, may be named :—*Psammobia tellinella*, *Ervilia castanea*, *Tapes pullastra*, *Trochus umbilicatus*, *Patella vulgata*. The following are the more striking species peculiar to Spain, being neither British nor common in the more eastern parts of the Mediterranean :—*Lutraria oblonga* and *rugosa*, *Mytilus africanus*, *Voluta olla*. Others are almost foreign to the Mediterranean, as *Ungulina rubra*, *Ostrea angulata*, *Halia priamus*, *Chiton fulvus*, *Siphonaria algesiræ*, *Mesalia brevialis*.

The Gastropods and Bivalves which are frequently used as food at Triest and Venice are mentioned, with their vernacular names, by Senoner, Zool. Garten, viii. pp. 103–107. The most common in the markets are *Murex trunculus* and *brandaris*, *Aporrhais pes pelecani*, *Cerithium vulgatum*, *Turbo rugosus*, some species of *Trochus*, *Patella scutellaris*, *Pholas dactylus*, *Solen vagina* and *siliqua*, *Scrobicularia piperata*, several species of *Venus* and *Cardium*, *Mytilus edulis*, *Modiola barbata*, *Pinna*, *Arca noæ*, several *Pecten*, and *Ostrea edulis*.

Thirty-six species of shells from the coasts of Sardinia are enumerated by Gennari, Atti Soc. Ital. Sc. Nat. viii. 1866, pp. 328–335.

Black Sea. A very poor list of the Mollusks of the Black Sea is given by Marcusen, containing the following species only :—*Teredo navalis*, *Cardium edule*, *Pholadomya plicata* (Midd.) [=*Adacna* of Eichwald], *Mytilus latus*, *Trochus varius*, *Rissoa oblonga*, *Buccinum reticulatum* [*Nassa*], *Paludina impura* [freshwater shell], *Tergipes edwardsii*. Arch. f. Naturgeschichte, xxxiii. p. 360. [The works of Siemaschko, Bull. Soc. Nat. Moscou, xx. 1847, and of Middendorff, Beiträge zu einer Malacozoologia Rossica, contain many more species from the Black Sea.]

2. *The Atlantic Coasts of North America.*

Labrador. Forty-three marine Bivalves and 57 marine Gastropods, 1 Brachiopod, and 1 Cephalopod are recorded by A. S. Packard as recent inhabitants of Labrador; most of them are the well-known arctic species common to the northernmost parts of Norway, Spitzbergen, and Greenland. Some of peculiar interest will be mentioned hereafter. The Cephalopod is the common squid named "*Ommastrophes todarus?*" by the author. The author distinguishes three faunas of the present time:—

1. The *arctic* or true *circumpolar* fauna, which can scarcely be said to be Asiatic, European, or American, restricted to a district north of the yearly isothermal line of 32°, which thus includes the Arctic-American archipelago, Northern Greenland, Spitzbergen, Nova Zembla, and the coast of Siberia.

2. The *subarctic* zone of life, corresponding to the yearly isothermal of 40°, starting from near Cape Breton in North America, and including Iceland, the Hebrides, the Faroe Islands, Finmark, and Northern Norway. On the American coast this fauna may be called *Syrtesian*, and is characterized by a small number of species not yet recorded as found in the circumpolar district, which only occur southward in the Acadian district in diminished numbers and impoverished in size. This Syrtesian fauna occupies Hudson's Bay, the coast of Labrador, and the northern coast of Newfoundland. Southwards it follows the line of floating ice, which partially excludes Anticosti, but includes both the great banks and the shoals lying to the south-westward along the track of the polar current which, on the coast of New England, flows between the coast and the inner edge of the Gulf-stream. Along this line lie the banks off Nova Scotia and Maine and Massachusetts, together with the St. George's Banks and the Nantucket Shoals. Its influence is likewise felt as far south as the shoals lying off the coast of New Jersey.

3. The *Acadian* or *New-England* fauna, the American representative of that of the Baltic, North Sea, and Scottish seas, the Boreal or Celtic fauna of Forbes. Its proper area are the shores of Nova Scotia and New England north of Cape Cod; but there are outliers of it situated north of its normal limits, due to the influence of the Gulf-stream, or, perhaps, to the absence of the polar current. Thus, while the mouth of the Bay of Fundy is properly a Syrtesian outlier, the head of the bay, the coast of New Brunswick, the western side of the Gulf of St. Lawrence, the mouth of the river St. Lawrence on its southern side, and a small isolated area of the southern coast of Newfoundland, sheltered from the polar current sweeping by Cape Race, and on which a small branch of the Gulf-stream may possibly impinge, are outlying areas of the Acadian fauna. Mem. Bost. Soc. Nat. Hist. i. pp. 278–290, 254, and 255.

3. *Subtropical and Tropical parts of the Atlantic.*

Madeira. The most common shells at Madeira, eaten in large quantities by the country people, are *Patella scutellaris* and *aspera* (Lam.), *P. guttata* (Orb.), *Purpura hæmastoma* (L.), and *Trochus colubrinus* (Gould), all either identical with or nearly allied to Lusitanian species. *Litorina striata* (King) is most common between tidemarks. *Pecten corallinoides* (Orb.) is one of the most characteristic species obtained by the dredge at this island. Martens, Preuss. Expedition, vol. i. pp. 13–19.—An interesting new shell from Madeira *Semperia paivana*, is described by H. Crosse, Journ. Conch. xv. p. 76.

Sargasso Sea. A list of animals found hitherto in the floating weed of the Atlantic between 19° and 45° N. lat. is given by G. v. Martens, Preuss. Exped., Botanical section, Tange [Fuci], pp. 9–13. It contains 9 species of Mollusks, viz.:—*Ommastrephes laticeps* (Owen), *Philonexis microstomus* (Orb.), *Octopus semipalmatus* (Owen)=*Tremoctopus quoyanus* (Orb.), *Scyllæa pelagica* (L.), *Æolis annulicornis* (Chamisso), *Fucola rubra* (Quoy and Gaimard), *Aplysia citrina* (Rang), *Litiopa nitidula* (Pfr.), and *Avicula strix* (Phil.).

West Indies. 245 species of marine shells, found at the Bahama Islands, are enumerated, and several Jamaica shells criticised, by J. Krebs, Ann. Lyc. Nat. Hist. New York, viii.—Schramm's Catalogue of Guadeloupe shells, sent to the Universal Exhibition at Paris, contains 781 species collected by Messrs. Caillet and J. Desbonne.

Rio Janeiro. A brief account of some sea-shells found in the bay of Rio Janeiro, by v. Martens, Preuss. Exped. i. pp. 41 and 42.

4. *Australian and Polynesian Seas.*

Southern Australia. Angas's list of marine Mollusca from Port Jackson contains 3 Cephalopods, 3 Pteropods, 313 Gastropods, 136 Bivalves, and 4 Brachiopods. *Phasianella* is represented by 5, *Voluta* by 3, *Cypræa* by 12, *Conus* by 3, *Risella* by 4, and even *Vanikoro* by 4 species. Many notes are added concerning the ground and depth inhabited by them. *Triton olearium*, *Dolabella scapula*, and *Operculatum.* [*Umbrella*] *indica* are common to this and the tropical seas of India. Proc. Zool. Soc. 1867, pp. 185–233 and 912–935.

New Caledonia. A list of New-Caledonian shells, 580 species, is given by E. Duplanche in a general account of this island, published in the French journal 'Revue Maritime et Littoral,' and reprinted by G. v. Frauenfeld, Verhandl. zool.-bot. Gesellsch. Wien, xvii. pp. 62–68. The molluscous animals generally are eaten by the natives, principally *Lucina tigerina*, *Strombus luhuanus*, *Trochus niloticus*, *Turbo rhodostomus* and *chrysostomus*, *Arca*, *Tridacna*, *Hippopus*, *Chiton*, *Patella*, *Mesodesma striatum*, &c.

Donax radians (Lam.) and *Mesodesma striata* [*-um*] (Desh.) is esteemed as food in New Caledonia; *Septifer bilocularis* (L.), on the other hand, is not eaten by the Europeans because it is found on corals. Ed. Marie, Journ. Conch. xv. p. 294.

Several new species from New Caledonia are described by H. Crosse, Journ. Conch. xv. pp. 177 and 318–321.

Polynesia. Ninety-two new marine species from the Polynesian Islands chiefly the Paumotu group and Tahiti, most of minute size, are described by

Mr. Pease, Am. Journ. Conch. iii. pp. 211–222, 271–297.—Some new species from the Fejee and Samoa Islands are described by H. Crosse, Journ. Conch. xv. pp. 297–302.

5. *Seas of China and Japan.*

China Sea. Remarks on marine shells are scattered through Martens's Report of the Zoology of the Prussian Expedition, i. pp. 56, 161, 164–169.

Two sea-shells from the wooded island east of Corea are mentioned by Crosse, Journ. Conch. xv. p. 212,—*Lampania cumingi* (Crosse) and *Nassa sinarum* (Phil.).

Japan. Numerous (very small) marine species are described by A. Adams, Proc. Zool. Soc. pp. 309–314; among them some new genera, as *Oscilla*, *Amaurella*, *Putilla*.

Gulf of Tartary and Northern Japanese Islands. Dr. Schrenck's work (noticed above, p. 488) treats of 172 species of marine Mollusks found in this region, viz. :—110 Gastropods, 158 Bivalves, and 4 Brachiopods. Besides, he mentions 84 other species indicated by other authors as having been found in the same regions. Thirty-two (17 Gastropods) are doubtless circumpolar; 10 extend to the arctic zone of the Pacific, but are absent in the corresponding zone of the Atlantic; 28 species are common to the west coast of North America (Sitka or California), but not arctic; 22 are common to the southern Japanese islands; 26 extend to the tropical regions of the Indian Ocean; 34 are, at present, to be regarded as peculiar to this fauna. Moreover there are some species mentioned as being hitherto known only from Peru, Chile, New Holland, and the Cape*, but which are now found by the Russian explorers also in the northern seas of Japan. *Pectunculus glycymeris*, finally, is a species common to Northern Japan and Europe without being arctic, and not even found in any other part of the Pacific. The physical relations of this sea, its temperature, currents, prevailing winds, are fully discussed in this part of Dr. Schrenck's work, some characteristic features of its malacological fauna pointed out, as the great number of species of *Chiton*, the large size and thickness of shells of many species, together with a rude, lustreless surface (*Ostrea laperousii*, *Pirula bezoar*, *Saxidomus nuttalli*, *Chiton stelleri*, &c.). Generally the fauna of the Northern Japanese seas, including the Gulf of Tartary, is stated to be not essentially different from

* With regard to the five species said to be common to this fauna and the Cape, but not found elsewhere, the specimens were derived from a collection made by a captain of a whaler of the Russian-American Society, and the Recorder thinks it highly probable that such characteristic Cape-shells as *Trochus zonatus* and *cicer*, &c., were picked up by the captain during a stay at the Cape on his way to the Pacific, and afterwards inadvertently mixed with the true Japanese shells. With regard to the Chilian and Australian species, a certain amount of similarity between the North and South Pacific faunas must be acknowledged; but whether they be the same species in the modern sense of this term is a question open to further examination, Dr. Schrenck being rather inclined to unite than to distinguish species.

that of the Southern Japanese islands, but only impoverished in species. This is ascribed chiefly to the less amount of salt in the water of the Gulf of Tartary—which receives the Amur river, and is in this respect analogous to the Baltic and Black Sea when compared with the North Sea and the Mediterranean. The distribution of the mollusks in different depths could only be ascertained in the Bay of Castries. It is carefully compared with our knowledge of the same subject in European seas; and Dr. Schrenck is inclined to agree with a statement of Dr. Lorenz, viz. that in more southern regions the bathymetrical zones are of less vertical extent, the same vertical differences of depth offering a greater difference of molluscan forms in the Adriatic than in Norway or in the Bay of Castries. Finally, the Recorder is bound to acknowledge the great care with which Dr. Schrenck has accomplished his task. He has evidently taken the works of Middendorff as a pattern for himself. The number of really new species in this work is small, Dr. Schrenck having published already, some years ago, the most interesting in the Bulletin of the Acad. of St. Petersburg, vol. v.

The malacological fauna of the middle part of Japan, especially the bay of Yeddo, has been examined by C. E. Lischke, Mal. Blätt. xiv. pp. 106–182, who enumerates and partly describes 55 species, among wh ch 28 Gastropods and 23 Bivalves.

The same subject is treated in a more general manner by the Recorder in his account of the Prussian Expedition, Zool. vol. i. pp. 139–142, 145–147, where he enumerates the mollusks found in the markets of Yeddo and Yokohama, and in the Bay of Nagasaki, adding their Japanese names.

6. *Pacific coast of North America.*

Vancouver Island. Fifty-nine species of sea-shells are enumerated by Baird, in Lord's 'Naturalist of the Vancouver Island and British Columbia,' vol. ii. pp. 356–370, 1866, 42 being Gastropods; the principal genera are *Crepidula* 5 sp., *Tectura* 8 sp., and *Chiton* 3 sp. (*Chitonidæ* 7 sp.). *Cardium corbis* (Martyn) and *Mytilus californiensis* are collected and eaten by the Indians.

California. Rob. E. C. Stearns has published a list of 84 species from Bauline's Bay, and another of 92 species from Santa Barbara and S. Diego. Proc. Calif. Acad. Nat. Sc. vol. iii.

Panama. Forty new species are described, and several others noticed, by Folin, in his work 'Les Méléagrinicoles' (see p. 487). All were found on pearl-oysters.

d. *Palæontology of Recent Species.*

In the diluvial strata of the valley of the Weichsel in Prussia, from its delta to the frontiers of Russian Poland, there were discovered, some years ago, remains of shells belonging to recent species, an account of which has been published by Dr. G. Berendt in 'Schriften der physikalisch-ökonomischen Gesellschaft,'

vol. vi. 1865. These researches were continued; and the shells having been examined by Professor Lovén, a supplementary account is given in vol. viii. 1867 of the same periodical. The number of species identified amounts now to ten, viz. *Ostrea edulis, Cardium edule, Tellina solidula, Corbula gibba, Mactra subtruncata, Scrobicularia piperata*=*Trigonella plana, Venus virginea, Cyprina islandica, Nassa reticulata,* and *Cerithium lima* (Brug.)=*reticulatum* (Da Costa). They are all living at present in the German Ocean, on the coasts of Great Britain and Norway; but some are not found at present in a living state in the Baltic; others, although living in that sea, are now constantly of smaller size and thinner consistence than the diluvial examples, which more resemble specimens from the German Ocean. These fossils belong strictly to the glacial period, while similar fossils, known long ago from some places in Sweden, are postglacial. It is stated in a postscript that similar glacial fossils have been discovered also in the province of Eastern Prussia, near Königsberg.

A. S. Packard, in his paper on the glacial phenomena of Labrador and Maine, gives much information on the existence of recent species during the quaternary or postpliocene period. Arctic species, as *Leda arctica, Pecten grönlandicus* [*Cardium*], *Serripes grönlandicus, Pandorina arenosa,* and *Fusus tornatus,* were then widely spread and most characteristic shells from Greenland to Portland, Maine. At present *Pecten grönlandicus* does not cross from Greenland to America; and *Leda arctica,* abounding in every clay-deposit, has now become wholly extinct south of Spitzbergen and the 70th parallel of latitude. A very few species, however, are at present nowhere found alive, for example, *Fusus labradorensis* and *Bela robusta.* The clay-beds of Canada and of Maine, eastwards of the Saco river, contain a Labrador or Syrtesian fauna (see above, page 516), which finds its limits for the posttertiary period near Portland and the river mentioned; at Point Shirley there is good evidence of the beginning of the Virginian fauna, where *Venus mercenaria* and *Buccinum plicosum* abound. This must have been the northern limit of the fauna so well developed in the Nantucket beds. All the facts laid down in this paper tend to disprove any theory of a tertiary or posttertiary continental connexion between Europe and America. Mem. Bost. Soc. Nat. Hist. i. pp. 254–258.

In Weinkauff's 'Conchylien des Mittelmeers,' the occurrence of shells in miocene, pliocene, or pleistocene (glacial) strata, which are specifically identical with recent species of the Mediterranean, is carefully noted. According to his statements, there are 79 per cent. of the recent Mediterranean Bivalves, including the Brachiopods, represented in pleistocene beds, 61 in pliocene, 25 in miocene; the Brachiopods alone give the following relative numbers:—$\frac{7}{17}$ in pleistocene, $\frac{1}{3}$ in pliocene, $\frac{1}{4}$ in miocene.

Caves in Liguria. Issel enumerates 17 land- and 7 sea-shells found in

the breccias and ossiferous caves of western Liguria, five of the former being extinct species, whilst all the others are still found living in the same country. The extinct species are:—*Zonites spelæus*, sp. n., *Helix ramoriniana*, sp n., *H. paretiana*, sp. n., *H. vermicularia* (Bonelli). They are tolerably nearly allied to living species of Southern Europe; only *Bulimus* (?) *antiquus*, sp. n., known from one mutilated specimen, is not referable to any group of living European shells. These extinct species were collected in the cave of Verezzi and the ossiferous breccia of Capra Zoppa; the grotto of Mentone contains only living species. *Zonites* [*Hyalina*] *cellarius*, in the breccia of Spotorno and Verzi, differs slightly from the living. *Helix rotundata* has been found to be more numerous and of larger size in the grotto of Verzi than it is at present in Liguria. Atti Accad. reale di Torino, xxiv.

J. Colbeau gives an account of the shells found in tuff-beds at Marche-les-Dames, in Belgium; they are identical with recent land- and freshwater species of the country. Ann. Soc. Malacol. de Belg. ii. pp. 9–12.

Oskar Böttger, in a paper entitled "Ueber die nachweisbaren Spuren des Lebens der Thier- und Pflanzenwelt in der Vorzeit" (on apparent traces of the life of animals and plants in former times), published in the 8th 'Bericht des Offenbacher Vereins für Naturkunde,' 1867, pp. 40–68, calls attention to peculiar scars observed in fossil and recent species of *Helix*. There are always two parallel scars near to each other; and the author thinks they may have been made by some Rodent in its attempt to open the shell.

Classification in general.

Dr. Mörch (Journ. Conch. xv. pp. 232–253) recapitulates once more the principles of his classification of the subkingdom of Mollusca, regarding the organs of circulation and generation as chief systematic characters, and not those of locomotion. He points out the coincidences of former essays of classification with his own, Latreille, as early as 1825, having proposed a similar classification, which was based on the generative functions of the Mollusca. The names proposed by Latreille are now substituted to his own in the following manner:—

1. Supraclassis *Phanerogama* (Latreille) = *Monotocardia* (Mörch).
   - Classis I. *Androgyna* (Mörch) = *Hermaphrodita* (Latr.).
   - II. *Dioica* (Latr.) = *Exophallia* (Mörch).
2. Supraclassis *Agama* (Latr.) = *Diotocardia* (Mörch).
   - Classis I. *Exocephala* (Latr.) = *Pseudophallia* (Mörch).
   - II. *Acephala* (Cuvier) = *Endocephala* (Latr.) = Dithyra.

For the subordinate divisions, in which no material change has been made, see Zool. Record, vol. ii. p. 213.

Another highly interesting paper, by the same author, in Amer. Journ. Conch. iii. pp. 114–132, is again devoted to general classification, but it is not capable of being condensed in an abstract.

Dr. Gray has made some historical remarks on the introduc-

tion of the Lamarckian and other systems into British conchology; also critical notes on the Cumingian Collection, and the creation of new species through the agency of dealers. Proc. Zool. Soc. pp. 726–732.

CEPHALOPODA.

The centres of the nervous system and the auditory organ of the Cephalopods have been investigated by Ph. Owsjannikow and Dr. A. Kowalewsky. The species examined are principally *Sepia officinalis* and *Octopus vulgaris*. Researches made upon *Loligo vulgaris*, *Sepiola*, and *Eledone moschata* render it probable that the differences observed between *Sepia* and *Octopus* are typical for the families of ten-armed and eight-armed Cephalopods.

In *Octopus* the cartilaginous capsule of the head contains, beside the nervous ganglia, a considerable quantity of a pellucid fluid, comparable to the cerebrospinal fluid of the Vertebrata; in *Sepia* the capsule is comparatively smaller, and filled by the ganglia themselves and a mass of capillary vessels and lymphatic corpuscules, comparable to lymphatic glands, but improperly named adipose mass by others. The brain contained in this sort of skull is composed of several ganglia or lobes, one more on each side in *Octopus* than in *Sepia*; each consists in its peripheric parts of grey, and in the centre of white substance, as in the vertebrata; the largest of these lobes is even provided with five furrows in *Octopus*, in which the grey substance penetrates deeper into the interior, and which may safely be compared with the gyri of the brain of higher animals. The course of the medullary fibres has been traced with considerable care by the authors; the largest or chief ganglion is united by radiating medullary fibres to each of the other ganglia (lobes); and it is that from which the optic as well as the acoustic nerve takes its origin, the latter traversing only the inferior ganglion. Reaching the auditory vesicle, the acoustic is divided into two branches, one of which terminates in a prominent disk of the inner walls of that vesicle, the other in a prominent semicircular ridge, provided with vibratory cylindrical epithelial cells; the continuity of primitive nervous fibres with those cylindrical epithelial cells has been ascertained by the authors. The otolith is always placed near to the ridge.

A more detailed record of J. Cheron's paper on the same subject, the nervous system of the Cephalopods (see 'Record' for 1866, p. 175) is given by P. Fischer in Journ. Conch. xvi. 1868, pp. 212–217; "bandelettes" of white and others of grey substance have been observed by Cheron in the *Octopodidæ*, but neither in *Sepia* nor *Loligo*.

For E. Mecznikow's paper on the development of *Sepiola* (written in the Russian language, 1867, St. Petersburg), see the

detailed abstract by Claparède in Bibl. Univ. 1867, October, pp. 186–192, and Ann. & Mag. Nat. Hist. 1867, xx. pp. 449–453.

The pamphlet of M. Lessona mentioned above (p. 487) is a popular treatise on Cephalopods. Its publication, like that of another issued by Crosse in the French Journal of Conchyliologie, has been called forth by the fabulous and rather poetical than true story of the "pieuvre" (*Octopus*) in Victor Hugo's novel, "Les travailleurs de la mer."

Sepia officinalis has been made the subject of observations by R. Fischer. It uses the two longer or tentacular arms in seizing its prey. It moves slowly forwards by moving the lateral fins, as well as by a gentle expulsion of water from the funnel, which is bent backwards for this purpose; a stronger expulsion of water from the funnel in a straight direction makes it swim backwards, like other Cephalopods.

Specimens of *Octopus vulgaris*, observed by the same author, used chiefly the first pair of arms for exploring, and the second for seizing the prey; it feeds on *Cardium edule* and other bivalves. These, as well as living crabs (*Carcinus mœnas*), are transferred by the arms to the mouth, where they are enveloped by the arms and interbrachial membrane; and after some time the empty shell or carapace is rejected without any fracture; even in the rejected shells of well-closed solid *Pectunculus glycymeris* no trace of mechanical injury could be discovered. *Octopus* walks on the ground, its body being sustained by the arms, their extremities only reaching the ground. The inspirations of this and other species have been observed to be 30–40 during a minute. Ann. Sci. Nat. viii. pp. 97–104.

Twelve species of Cephalopoda inhabiting the northern and western coasts of France are enumerated by P. Fischer, Journ. Conch. xv. pp. 12–15.

Octopus filosa [*-us*], sp. n., Howell, Am. Journ. Conch. iii. p. 240, pl. 14, Santa Cruz.

Octopus punctatus. Teeth of the radula described by Dall, Proc. Calif. Ac. Nat. Sc. iii. p. 243.

Argonauta. Three forms of the shell are distinguished:—(1) with ear-like prolongations on the side of the mouth; (2) with an obtuse angle instead of the prolongations; (3) without any trace of them. These variations are found in each of the three principal species of the genus, *A. argo*, *tuberculata*, and *hians*, and have caused the creation of some species which seem scarcely admissible. A fourth very rare form is that in which the ears are present, but agglutinated to the spire; it has been observed in *A. argo*. Martens, Ann. & Mag. Nat. Hist. Aug. 1867, xx. pp. 103–106.

Ommatostrephes todarus (Raf.) not rare at the Färöer. It is the *Sepia loligo* of former authors treating of the fauna of those islands. Mörch, Naturhist. Forenings Vidensk. Meddel. p. 102.

Loligo hemiptera, sp. n., Howell, Am. Journ. Conch. iii. p. 239, pl. 13, Gulf of Mexico and coast of Florida.

Sepiola atlantica (Orb.), distinguished by four rows of cups in the last part of the fourth or ventral pair of arms, occurs on the coast of Scandinavia and the Färöer Islands. There is another species in the Mediterranean, also exhibiting more rows of cups in the ventral arms than *S. rondeletii*; it may be *S. owceniana* (Orb.). Mörch, *l. c.* p. 101.

HETEROPODA.

Ianthina. A general account of this genus is given by Jeffreys; various species, as *communis* (Lam.), *globosa* (Swains.), *pallida* (Harvey), and *exigua* (Brug.), have been carried northward by the Gulf-stream; and one, *rotundata* (Leach, MS., Dillw.), pl. 3. fig. 1, is occasionally cast on shore from July to November in the south and west of England, Ireland, and the Bristol Channel. Brit. Conch. iv. pp. 174–189.

GASTROPODA.

S. de Luca and P. Panceri state that the secretion of the salivary glands contains 3–4 per cent. of free sulphuric acid, not only in *Dolium galea*, in which this had been previously observed by Troschel in 1854, but also in *Tritonium nodiferum, corrugatum, cutaceum, hirsutum* [=*succinctum*?], *Cassis sulcosa, Cassidaria echinophora, Murex trunculus, M. brandaris,* and even *Aplysia camelus.* Ann. Sci. Nat. viii. pp. 82–88.

In a general description of the radula of the *Æolididæ*, Rud. Bergh states that the number of teeth in one row is not always the same in different individuals of equal size of the same species, or even on both sides of the same individual, and therefore that it cannot be relied upon for specific distinction. Of course this is only the case where the number is rather large. He confirms the statement made by Troschel, that the teeth are formed in the pulpous mass and gradually advance from behind, the foremost being lost; but he agrees with Dohrn [and Crosse] in opposing a classification of mollusks exclusively based upon the radula. Bergh, Æoliderne, pp. 34–36.

PECTINIBRANCHIATA.

Proboscidifera rhachiglossa.

Muricidæ.

Siphonal fasciole is the zone generally differentiated by sculpture which at its end forms the internal boundary of the siphonal notch or canal. As its modifications and relations are often of considerable importance and serve to distinguish genera and higher groups, it is deserving of a distinct name. Th. Gill, Am. Journ. Conch. iii. p. 152, note.

Murex aciculatus (Lam.)=*corallinus* (Scacchi)=*inconspicuus* (Sowerby and Reeve), British. Jeffr. Brit. Conch. iv. p. 310.

Murex falcatus (Sow.), *M. roriflnus* (Adams et Reeve)=*monodon* (Eschscholtz), and *M. inornatus* (Récluz)=*Tritonium submuricatum*, Schrenck in 1863, all from Hakodate, Schrenck, *l. c.* pp. 410–415.—*M. ramosus* (L.)=*inflatus* (Lam.), Bay of Yeddo, Liscke, Mal. Blätt. xiv. p. 167.

Trophon. The following species are British:—1. *muricatus* (Mont.)=*echinatus* (Phil. as *Fusus*), 2. *barvicensis* (Johnst.), 3. *truncatus* (Ström)=*clathratus* of Forbes & Hanl., not Linné,=*bamffius* (Mont.); a variety of it is

gunneri (Lovén). Distinct from the last, but not British, is *clathratus* (L.)= *scalariformis* (Gould), arctic and in glacial beds. Jeffreys, Brit. Conch. iv. pp. 315–322.

Tritonium (*Trophon*) *clathratum* (L.), Bay de Castries, Schrenck, *l. c.* p. 415. —*Tritonium* (*Buccinum*) *cancellatum* (Lam.)= *Triton oregonense* (Redfield), Hakodate, Schrenck, *l. c.* p. 431.—*Trophon triangulatus*, sp. n., Carpenter, Proc. Calif. Acad. Nat. Sc. 1866, p. 224, Catalina Islands, California.—*Tr. hanleyi*, sp. n., Angas, Proc. Zool. Soc. p. 110, pl. 13. fig. 1, Port Jackson.

Fusus. The British species are arranged by Jeffreys in the following manner: —1. *antiquus* (L.), with four varieties (*alba*, *ventricosa*, *striata*, *gracilis*) and twelve monstrosities; 2. *norvegicus* (Chemn.); 3. *turtoni* (Bean); 4. *islandicus* (Chemn.), the young of which=*sabini* (Hancock); 5. *gracilis* (Da Costa) =*islandicus* of Forbes & Hanl.; 6. *propinquus* (Alder), including as variety *Tritonium turritum* (Sars); 7. *buccinatus* (Lam.), distinct from *vulpinus* (Born); 8. *berniciensis* (King) = *Trit. islandicum* of Lovén; 9. *fenestratus* (Turt.)=*Buccinum fusiforme* (Brod., Forb. & Hanl.).

Fusus islandicus (Gould) [Chemn.], variety, and *F. syrtensis*, sp. n., both from Labrador, Packard, Mem. Bost. Soc. Nat. Hist. i. p. 288; the latter figured, pl. 7. fig. 12.

Fusus crebriliratus (Reeve), Bay of Yeddo, Lischke, Mal. Blätt. xvi. p. 167. —*Tritonium* (*Fusus*) *spectrum* (Adams & Reeve)=*F. novæ hollandiæ* (Reeve), Nangasaki and Hakodate, Schrenck, *l. c.* p. 417.

Fusus tenuiliratus, *F. nodosoplicatus*, and *F. pateli*, spp. nn., Dunker, Novitat. Conch. pp. 98–100, pl. 33. figs. 1–6; the second from Japan, the localities of the two others unknown. *F. pirulatus* (Reeve), var., Dunker, ibid. p. 103, pl. 34. figs. 5, 6.

[*Urosalpinx*, Stimps.] *Buccinum plicosum* (Gould) [Menke=*Fusus cinereus*, Say], feeding on oysters, piercing the shell by the tongue near its apex, called *drill* by the American oyster-breeders. Fellowes, Americ. Naturalist, i. pp. 200–201.

Lachesis minima (Montagu, as *Buccinum*) =*brunnea* (Donov.)=*mammillata* (Risso) belongs to the *Muricidæ*, not *Pleurotomidæ*. Jeffreys, Brit. Conch. iv. p. 313, pl. 6. fig. 1. The same synonymy is given by Gonzalez Hidalgo, Journ. Conch. xv. p. 283; but he includes also *Murex felineæ* (Chiaje).

Buccinidæ.

This family, as limited by Stimpson, corresponds nearly to the *Fusacea* of Troschel, containing members of *Muricidæ* and *Buccinidæ* of former authors. It is characterized by the lateral plates of the radula having 2–4 strong teeth; the central plate is commonly not broader than long, or, if so, its posterior edge is straight, and has 3–7 teeth, never more, as in the *Nassidæ*. Dr. Troschel subdivides this family into 6 subfamilies :—

a. *Buccinina*. Median plate broader than long, sinuated in front, behind straight with 3 or 4 teeth. Genera: *Cominella*, *Buccinum*, and *Volutharpa*. The radula of the following is described and figured :—*C. limbosa* (Lam.), *B. undatum* (L.), *hydrophanum* (Hancock), *grönlandicum* (Chemn.), *glaciale* (L.), *V. perryi* (Jay), Troschel, *l. c.* pp. 69–72, pl. 6. figs. 6–14; *Cominella maculata* (Martyn) is excluded.

b. *Neptunina* differs rather by the shell than by the radula from the preceding. Genera: *Neptunea*, *Busycon*, *Pizania*, *Clavella*, *Cantharus*, *Metula*, *Euthria*. The radula of the following is described and figured:—*N. antiqua* (L.), *bulbosa* (Bernardi), *dilatata* (Quoy & Gaim.), *pallida* (Brod. & Sow.), *Pis. striata* (Gmel.)=*Buccinum maculosum* (Lam.), *auritula* (Link), *sulcata* (Gmel.), *proteus* (Reeve as *Buccinum*), *fusiformis* (Blainv.), *tincta* (Stimps. as *Tritonidea*), *Cl. distorta*, *Canth. undosus* (L.), *flaviflamma* (Reeve), *M. mitrella* (Adams & Reeve), *Euthria cornea* (L.) and *lineata* (Chemn.). Troschel, *l. c.* pp. 72–79, pl. 6. figs. 15–17, pl. 7. figs. 1–12.

c. *Cassidulina*. Head lengthened, like a rostrum. Median plate of the radula square, with three teeth; lateral plates narrower than in the preceding subfamilies. Genera: *Cassidulus*, *Hemifusus*, *Pugilina*, *Volema*, and *Myristica*. Description and figures of the radula of *C. melongena* (L.), *H. tuba* (Gmel.), *ternatanus* (Gmel.), *Pugilina morio* (L.), *vespertilio* (Lam.), *V. paradisiaca* (Reeve as *Pyrula*), *M. aspera* (Martini). Troschel, *l. c.* pp. 79–82, pl. 7. figs. 13–19.

d. *Photina*. Radula similar to the preceding; lateral plates notched on the front edge. Genera: *Phos* and *Engina*. Descriptions and figures of the radula of *Ph. senticosus* (L.), *Buccinum maculatum* (Martyn), and *Engina mendicaria* (L.). Troschel, *l. c.* pp. 82–84, pl. 8. figs. 1–4.

e. *Vasina*. Lateral plates deeply notched on the front edge, their inner tooth much larger than the outer. One genus, *Vasum*. Radula of *V. cornigerum* (L.) described and figured, Troschel, *l. c.* pp. 84–86, pl. 8. fig. 5.

f. *Imbricarina*. Lateral plates similar to those of *Vasum*, median plate with five teeth. *Imbricaria conica* (Schumacher), *l. c.* p. 86, pl. 8. fig. 6.

[*Neptunea.*] *Tritonium* (*Fusus*) *antiquum* (L.), variety from Sachalin and Yesso; *Tr.* (*F.*) *despectum* (L.), Middendorff, Bay de Castries; *Tr.* (*F.*) *arthriticum* (Val. et Bernh.)=*F. bulbaceus* (Val.), including three varieties *tuberculata*, *carinata*, and *lævigata*, Gulf of Tartary, Sachalin, and Yesso; *Tr.* (*F.*) *jessoense* (Schrenck), pl. 17. figs. 8–10, Hakodate. Schrenck, *l. c.* pp. 419–427.

Fusus contrarius (Gmel., Lam.) living on the oceanic coast of Spain and Portugal. Gonzalez Hidalgo, Journ. Conch. xv. p. 276.

Chrysodomus tabulatus, sp. n., Baird, in Lord's Naturalist in Vancouver Island, vol. ii. p. 356, Esquimalt Harbour.

[*Hemifusus*] *Pyrula tuba* (Gmel.), Hakodate, Schrenck, *l. c.* p. 400.

Cantharus (*Tritonidea*) *unicolor*, sp. n., Angas, Proc. Zool. Soc. p. 110, pl. 13. fig. 2, Port Jackson.

Buccinum undatum (L.). A detailed account of its habits, varieties, and monstrosities by Jeffreys, Brit. Conch. iv. pp. 286–293. A second British species is *B. humphreysianum* (Bennet) at the Shetland Islands and Hebrides; but *glaciale* (L.) and *grœnlandicum* (Chemn.) are not found living in the British seas, *l. c.* pp. 293–295.

Buccinum grönlandicum (Hancock)=*hancockii* (Mörch), Labrador, Packard, Mem. Bost. Soc. Nat. Hist. i. p. 287, pl. 7, fig. 5; *B. undulatum* (Möller)=*labradorense* (Reeve), ibid. fig. 3, young, fig. 4, adult; *B. tenue* (Gray)=*scalariforme* (Möller), ibid. fig. 6, fossil specimen; *B. cretaceum* (Reeve), ibid. fig. 7, described p. 288. All these are living on the coasts of Labrador. *B. cyaneum* (Brug.), fig. 10, recent from Newfoundland, fig. 9, fossil from Montreal.

[*Buccinum.*] *Tritonium* (*Bucc.*) *marmoratum* (Reeve), Hakodate; *Tr.* (*B.*) *dunkeri* (Küst.)=*Fusus lineolatus* (Dunker), Hakodate [?]; *Tr.* (*B.*) *undatum* (L.), var. *pelagica* (King) and var. *schantarica* (Midd.), Sachalin; *Tr.* (*B.*), *ochotense* (Midd.), Sachalin; *Tr.* (*B.*) *pericochlium* (Schrenck), pl. 27. figs. 11, 12, Hakodate. Schrenck, Reisen, ii. pp. 427–434.

Buccinopsis dalei (J. Sow. as *Buccinum*) described and figured by Jeffreys, Brit. Conch. iv. p. 297, pl. 5. fig. 3.—*Tritonium eburneum* (Sars) is regarded as a variety of this species.

PURPURIDÆ.

Vitularia aspera, sp. n., Baird in Lord's Naturalist in Vancouver Island, vol. ii. p. 357, Esquimalt Harbour.

Purpura barcinonensis, sp. n., Hidalgo, Journ. Conch. xv. p. 357, pl. 12. fig. 1, Barcelona [=*hæmastoma*, var.].

Purpura (*Stramonita*) *neglecta*, sp. n., Angas, Proc. Zool. Soc. p. 110, pl. 13. fig. 3.

Purpura (*Thalessa*) *distinguenda* (Dunker), Reise Novar. Moll. pl. 1. fig. 3; *P.* (*Polytropa*) *tristis* (Dunker), ibid. fig. 4. [See Zool. Record for 1866, p. 179; the former appears to be one of the numerous variations of *P. hippocastanum*, the other is scarcely different from *P. quoyi* (Desh.).]

Purpura freycinetii (Desh.)=*attenuata* (Reeve), Hakodate and Bay of Castries, varieties of form and sculpture described.—*P. luteostoma* (Chemn.), Korea and Hakodate; *P. undata* (Lam.), *P. marginatra* (Blainv.), and *P. madreporarum* (Sow.), from Hakodate. Schrenck, *l. c.* pp. 388–396.

Purpura tumulosa (Reeve), Bay of Yeddo, Lischke, Mal. Blätt. xiv. p. 170. —*P. luteostoma*, Yokohama, Martens, Preuss. Exped. i. p. 138.

Ricinula speciosa, sp. n., =*R. clathrata*, var., Reeve, Conch. Ic. fig. 9*a*, Philippines. Dunker, Novitat. Conch. p. 100, pl. 33. fig. 78.

Sistrum affine (Proc. Zool. Soc. 1862), *striatum*, *squamosum*, and *triangulatum*, spp. nn., Pease, Am. Journ. Conch. iii. pp. 276–278, pl. 23. figs. 12–15, the first three from the Kingsmill Islands, the last from Hawaii.

[*Rapana*] *Pyrula bezoar* (L.)=*Rapana thomasiana* (Crosse), Hakodate, Schrenck, *l. c.* pp. 397–400, Lischke, Mal. Blätt. xiv. p. 170; common at Yokohama, sold in the markets, Martens, Preuss. Exped. i. p. 140.

Latiaxis mawæ=*purpurata*; *L. pagoda*=*textilis*=*eugeniæ*=*nodosa*, is a second species. Gray, Ann. & Mag. Nat. Hist. xx. p. 78.

[*Pirula*, Lam.] The three allied, so-called, genera *Fulgur* (Montf.), *Sycotypus* (Browne), and *Tudicla* (Link), are reviewed by TH. GILL, and all the species known enumerated. The recent ones are *Fulgur carica* (Gmel.), *perversa* (L.), *coarctata* (Sow.), all from the east coast of North America [and Gulf of Mexico], *Sycotypus canaliculatus* (L.) and *pyrum* (Dillw.), with the same geographical distribution. Some other species occur in the miocene beds of Carolina and Maryland. *Tudicla* has only one species, *spirillus* (L.); the nearly allied *Fasciolaria porphyrostoma* (Ad. et Reeve) should be regarded as the type of a new genus, *Streptosiphon*. Am. Journ. Conch. iii. pp. 141–152.

T. A. CONRAD gives also a review of the species of *Sycotypus* and *Busycon*, observing that the distinctive characters, although apparent in the recent species, do not hold good for miocene shells. He enumerates the recent species as follows:—*Sycotypus canaliculatus* (L.), *S. plagiosus* (Conrad), with a variety, *elegans* (Conrad), and *S. pyrum* (Dillw.)=*Fulgur pyruloides*

(Say); *Busycon aruanum* (L.) = *Pyrula carica* (Lam.) ≟ *B. spinosum* (Conrad), *B. elicrans* (Montf.), Reeve, Pyrula, f. 16, Kiener, pl. 3. fig. 1, Chemnitz, figs. 744, 756, and 757; *B. candelabrum* (Lam.), *B. coarctatum* (Sow.), and two reversed species—*B. kieneri* (Phil.)=*gibbosum* (Conrad), and *B. perversum* (L.). Am. Journ. Conch. iii. pp. 182–185. [The Recorder thinks that Mr. Conrad goes too far in distinguishing species; he does not give distinctive characters, and the original accounts of these species support fully the results arrived at by Mr. Graham Ponton. At all events Mr. Conrad is wrong in assigning the specific name *aruanum* to the American shell called *Pyrula carica* by Lamarck. The shell described by Rumph as *Buccinum aruanum* is Lamarck's *Fusus proboscidiferus*, which really comes from the Aru Islands near New Guinea.]

Pirula (*Fulgur*) *carica* (Lam.) and *perversa* (L.). Graham-Ponton shows that none of the differences between these two so-called species are constant but of rather individual character; therefore he regards them as varieties of one species, *carica* (Lam.), Ann. & Mag. Nat. Hist. July, 1867, xx. pp. 28–30. This view is opposed in the American Journal of Conchology, iii. p. 328, but without fresh evidence.

Nassidæ.

Troschel follows Stimpson in establishing a distinct family, *Nassacea*, characterized by a radula the median plate of which is crescent-shaped, with numerous denticles on its posterior edge, the lateral plates provided with two strong teeth. This family comprises the genera *Bullia*, *Pseudostrombus*, *Neritula*, *Amycla*, *Arcularia*, *Nassa*, and *Ilyanassa* (Stimps.).

Description and figure of the radula of *B. rhodostoma* (Gray), *achatina* (Lam.), *annulata* (Lam.), *Ps. vittatus* (L.), *Ner. neritea* (L.), *Am. corniculum* (Olivi), *Arc. thersites* (Brug.), in which the inner edge of the inner tooth of the lateral plates is also denticulated, *N. arcularia* (L.), *coronata* (Brug.), *scalariformis* (Chemn.), *mutabilis* (L.), *siquijorensis* (Ad.), *margaritifera* (Dunker), *concinna* (Powis), *lachrymosa* (Reeve), *tænia* (Gmel.), *mitralis* (Ad.), *variabilis* (Phil.), *incrassata* (Müll.), *ambigua* (Pult.), *reticulata* (L.), *cancellata* (Chemn., Mörch, which is probably Lovén's *reticulata*), and *gayi* (Kien.). Troschel, *l. c.* pp. 87–96, pl. 8. figs. 7–21.

Nassa. The new genus *Ptychosalpinx*, Gill, Am. Journ. Conch. iii. p. 153, created for miocene Buccinums, with a revolving marginal linear plait in front, is reexamined by T. A. Conrad, ibid. pp. 261–264, who shows its close affinities with *Nassa*, especially *N. trivittata* (Say) and *N. obsoleta* (Say), "so that it is difficult to separate all these genera or subgenera by invariable characters." Moreover *Ilyanassa* is stated to have the inner lip distinctly striate.

Nassa nitida, sp. n., Jeffreys, noticed as a variety of *Buccinum reticulatum* by Montagu, muddy estuaries of the Thames and Orwell; the difference between it and *N. reticulata* is not less than between *N. incrassata* and *N. pygmæa* (Lam.). [The Recorder thinks that both would be better regarded as varieties of *reticulata* and *incrassata* respectively.] Jeffr. Brit. Conch. iv. p. 349.

Nassa semisulcata and *N. coturnix*, described by Dunker in 1853, figured now, Novitat. Conch. pl. 32. figs. 5, 6, 7 & 8.

Nassa (*Alectryon*) *intermedia* (Dunker, see 'Record' for 1866, p. 179) figured in Reis. Novar. Moll. pl. 1. fig. 2.

Nassa approximata (Pease)=*tænia* of the Voyage de l'Astrolabe and the Voyage au Pôle Sud, not of Gmelin, Polynesia. Pease, Am. Journ. Conch. iii. p. 272, pl. 23. fig. 3.—*N. gracilis*, sp. n., Pease, ibid. p. 273, fig. 4, Ascension Island, Polynesia.—*N. microstoma* (Pease) again described, ibid. p. 233.—*Nassa lecadrei*, sp. n., Folin, Méléagrinicoles, p. 73, pl. 6. fig. 14, on pearl-oysters from Panama.—*Nassa insculpta*, sp. n., Carpenter, Proc. Calif. Acad. Nat. Sc. 1866, p. 223, California.—*Nassa morleyi*, sp. n., Crosse, Journ. Conch. xv. p. 445, locality unknown.

Tritonium (*Nassa*) *fraterculus* (Dunker) and *gemmuliferum* (Adams), Hakodate. Schrenck, *l. c.* pp. 435–437.

[*Bullia*] *Tritonium* (*Volutharpa*) *ampullaceum* (Midd.) = *Bullia perryi* (Jay) = *Volutharpa deshayesiana* and perhaps also *mörchiana* (Fischer), Sachalin and Hakodate. Schrenck, *l. c.* pp. 437–440.

Eburna japonica (Reeve), from Hakodate, Schrenck, *l. c.* p. 441; from Nangasaki, Lischke, Mal. Blätt. xiv. p. 170; from Yokohama, sold in the shops, Martens, Preuss. Exp. i. p. 140.

Olividæ.

Oliva gracilis (Brod. et Sow.), *dama* (Mawe) = *lineolata* (Reeve), *anazora* (Duclos), and *tergina* (Duclos), Bay of Castries, Gulf of Tartary. Schrenck, *l. c.* pp. 453–457.

Oliva violacea, *jamaicensis*, *polita*, *piperata*, *faba* (Philippines), *blanda*, *cylindrica* (Borneo), *ornata* (North Australia), *similis*, *pallida*, *oblonga* (Central America), and *truncata* (Cape of Good Hope) are new species described by Marrat, Ann. & Mag. Nat. Hist. xx. pp. 213–215.

Olivella (*Callianax*) *simplex*, sp. n., Pease, Am. Journ. Conch. iii. p. 281, pl. 23. fig. 24, Paumotu Islands.

Fasciolariidæ.

According to Prof. Troschel's researches *Fasciolaria*, *Latirus*, *Leucozonia*, and *Peristernia* agree with one another in the structure of the radula; he describes and figures those of the following species:—*F. salmo*, *tulipa*, *trapezium*, *filamentosa*, *distans*, and sp.?; *Latirus*, sp.; *Leucozonia angulata*, *fuscata*, and *triserialis*; *Peristernia nassatula* (Gebiss der Schnecken. ii. pp. 60–66, pl. 5. figs. 12–20, pl. 6. figs. 1–3). All have three plates in each series, the lateral ones transversely elongate and multicuspidate, the middle one square, with three, rarely five points. *Fusus syracusanus* (L.) has exactly the same radula, and therefore is transferred by Prof. Troschel to the genus *Latirus*, where it will be the type of a new subgenus, *Aptyxis*, wanting the columellar folds. In *Fusus islandicus* (Chemn.), the radula of which is copied by Troschel from Lovén, the lateral plate is shorter, but also multicuspidate, the middle one has only one point; nevertheless it agrees more with the *Fasciolariidæ* than with the rest of *Fusus* or *Neptunea*, and therefore is placed by Troschel in this family as genus *Sipho* (Klein). The genus *Peristernia* has been removed by Dr. Stimpson from the *Fasciola-*

riidæ (see 'Zool. Record,' ii. p. 243), on account of a species (not named), the radula of which shows the type of the *Buccinidæ*, and which, therefore, cannot remain in the same genus with *P. nassatula*, the type of the genus.

Fasciolaria filamentosa (Chemn., Lam.), Hakodate. Schrenck, *l. c.* p. 441.

Fasciolaria purpurea (Jonas), var., and *F. audouini* (Jonas), var., Dunker, Novitat. Conch. pp. 94, 95, pl. 32. figs. 1, 2, & 3, 4, Natal and Red Sea.

Latirus squamosus (Pease, Proc. Zool. Soc. 1862) figured in Am. Journ. Conch. iii. pl. 23. fig. 16.—*L. gibbus* and *granulosus*, sp. n., Pease, ibid. pp. 278, 279, pl. 23. figs. 17 & 18, Polynesia.

Vasidæ.

Radula of *Vasum cornigerum* described by Troschel, *l. c.* p. 84, pl. 8. fig. 5. (See "Buccinidæ," p. 526).

Volutidæ.

Prof. Troschel has described the radula of the following species (*l. c.* pp. 54–57, pl. 5. figs. 1–5):—*Cymbium olla*, *Melo nautica* [*-us*], *Voluta* (*Aulica*) *nobilis* and *vespertilio*, *Scaphella turneri*, *Volutomitra grönlandica*; the first four agree essentially with one another, the lamina being tricuspidate,—subfamily *Cymbiinæ* (H. et A. Ad.). The description of the radula of *Scaphella* is copied from that given by Gray; the lamina is unicuspidate. The radula of the other species of the subfamily *Volutinæ* (H. et A. Adams) is not known, nor of any of *Zidoninæ*. The radula of *Volutomitra* is proved to be really the one described by Gray: it has only one lamina in each series, which is unicuspidate, thus agreeing with *Scaphella*; but several species introduced by H. et A. Adams into this genus are true *Mitræ*—for example, *M. cornea* (Lam.), as is proved by the radula. [Dr. Mörch, Journ. Conch. xv. p. 241, doubts if the radula represented by Dr. Gray as that of *Scaphella turneri* be really that of a species of *Volutidæ*, as it has a striking resemblance to that of a Nudibranchiate, *Favorinus albus*. On the other hand, Prof. Troschel's researches confirm the correctness of Dr. Gray's statements.]

Voluta rückeri, sp. n., Crosse, Journ. Conch. xv. p. 444, Swan River.—*Voluta tissotiana*, sp. n., Crosse, *l. c.* p. 195, pl. 6. fig. 1, locality unknown. Allied to *V. flavicans* (Gmel.).

Voluta megaspira (Sow.) = *lyriformis* (Kien.), Hakodate; *V. pusilla* (Schrenck), pl. 17. figs. 13, 15, only 9½ mill. long, Hakodate. Schrenck, *l. c.* pp. 442–446.

Lyria deliciosa (Montrouzier). The anatomy is given by P. Fischer, Journ. Conch. xv. pp. 349-356, pl. 13. Beside the presence of an opercle, there is no essential difference from other *Volutæ*.

Mitridæ.

The researches of Prof. Troschel lead to a total breaking up of the Lamarckian genus *Mitra*; in *M. episcopalis*, *cornea*, *fusca*, *adusta*, and *fraga* (pp. 67–69, pl. 6. figs. 4–8) the radula

is of the type of the *Fasciolariidæ*, the lateral plate being transversely elongate and multicuspidate, the middle one nearly square, with five points in the three former species, with a large and three small ones on each side in *M. adusta* (subgenus *Nebularia*), and with eight equal in *M. fraga* (subgenus *Chrysame*). *Cylindra* is transferred to the *Marginellidæ* on account of the radula (observed in *C. nucea*, p. 58, pl. 5. fig. 7) wanting the lateral plates. *Imbricaria conica* (Schumacher) = *Conohelix marmorata* (Swains.) has short lateral plates with only two points, the inner one much stronger; the middle plate is nearly square, with five points, the central of which is the strongest; this genus is therefore transferred to his *Fusacea* [*Buccinidæ*], among which it will form a distinct subfamily, *Imbricarina* (p. 86, pl. 8. fig. 6). *Strigatella* and *Turricula* agree with each other, and will form a family, to be treated of in a future part of the author's work.

Mitra (*Cancilla*) *strangei*, sp. n., Angas, Proc. Zool. Soc. p. 110, pl. 13. fig. 4, Port Jackson.

Mitra graeffi, sp. n., Crosse, Journ. Conch. xv. p. 297, pl. 11. fig. 6, Samoa Islands. Allied to *M. dichroa* and *infrafasciata*.

Mitra assimilis, sp. n., Pease, Am. Journ. Conch. iii. p. 211, pl. 15. fig. 1, Polynesia; *M. flammulata*, sp. n., Pease, *l. c.* p. 212, Sandwich and Paumotu archipelago; *M. brunnea* (Pease) is not identical with *fuscescens* of the same author, Pease, *l. c.* p. 233; *M. sextilis*, sp. n., Pease, *l. c.* p. 271, Hawaii; *M. glabra*, sp. n., Pease, *l. c.* p. 272, pl. 23. fig. 2, Ascension Island, Polynesia.

Mitropsis, g. n., Pease. Outer lip with a distinct sinus like *Pleurotoma*; columella bordered by a callosity as in *Columbella*, but plaited. *M. fusiformis*, sp. n., Pease, *l. c.* p. 211, pl. 15. fig. 2, Paumotu archipelago.

Strigatella brunnea, sp. n., Pease, *l. c.* p. 215, pl. 15. fig. 7, Polynesia.

Turricula modesta, sp. n., fig. 6, *Turr.* (*Costellaria*) *fortiplicata*, sp. n., fig. 3, *T.* (*C.*) *plicatula*, sp. n., fig. 4, *T.* (*Pusia*) *nodulosa*, sp. n., fig. 5, all from Polynesia, Pease, Am. Journ. Conch. iii. pp. 212–214, pl. 15; *T.* (*P.*) *putillus* (Pease), figured, ibid. f. 24.

Mitra (*Costellaria*) *nicobarica* (Dunker), Reis. Novar. Moll. pl. 1. fig. 5.—*M. microzonius* (Lam.), Hakodate, Schrenck, *l. c.* p. 451.

Thala alba and *angiostoma*, spp. nn., Pease, Am. Journ. Conch. iii. pp. 215, 216, pl. 15. figs. 8 & 9, Paumotu archipelago. To the same division, which Mr. Pease thinks to be of generic rank, belong also *Th. saltata* (Pease, Proc. Zool. Soc. 1865) and *Pleurotoma todilla* (Mighels, Proc. Bost. Soc. 1845), Am. Journ. Conch. iii. p. 216.

Cylindra formosa, sp. n., Pease, *l. c.* p. 271, pl. 23. fig. 1, Ascension Island, Polynesia.

Columbella. Two British species are introduced into this genus by Jeffreys, viz. *C. halicæti*, sp. n., pl. 6. fig. 5, found about 25 miles N.N.W. of Unst, in 85–95 fathoms; and *C. nana* (Lovén as *Tritonium*, Forb. & Hanl. as *Mangelia*) = *Fusus albus* (Jeffr. in 1841), Shetland Islands. The former belongs to that section which is characterized by the outer lip being thickened and furrowed inside, and the apex of the spire regularly nipple-shaped, including also *Purpura picta* (Turt.) and *Buccinum cinctum* (Pult.), both pseudo-British. The latter has the outer lip thin and smooth, and the apex irre-

gularly coiled, for which section the name *Thesbia* is proposed. Brit. Conch. iv. pp. 356–360.

Columbella hæmastoma (Sow.), *fuscata* (Sow.), and *solidula* (Reeve), Bay de Castries. Schrenck, *l. c.* pp. 446–450.

Columbella (*Mitrella*) *albomaculata*, sp. n., Angas, Proc. Zool. Soc. p. 111, pl. 13. fig. 5, Port Jackson.

Æsopus filamentosus, sp. n., Angas, *l. c.* fig. 6, Port Jackson.

Anachis subturrita, sp. n., Carpenter, Proc. Calif. Acad. Nat. Sc. 1866, p. 223, San Diego, California.

Seminella, a new genus proposed for a group of small, smooth, shining, often iridescent shells inhabiting Polynesia, as *Cithara ornata* and *C. varia* (Pease); they should be classed with the *Columbellinæ*, and not with *Anachis* (A. Ad.), which appears to be a conglomerate genus. Pease, Am. Journ. Conch. iii. pp. 233, 234.

Amycla? *chrysalloides*, sp. n., Carpenter, Proc. Calif. Acad. Nat. Sc. 1866, p. 223, California.

Engina fusiformis and *ovata* (Pease, Proc. Zool. Soc. 1865) figured in Am. Journ. Conch. iii. pl. 23. figs. 5 and 6; *E. tuberculosa* (Pease, Proc. Zool. Soc. 1862) described, ibid. p. 274; *E. nodicostata*, *variabilis*, *striata*, and *parva*, spp. nn., Pease, *l. c.* pp. 274–276, pl. 23. figs. 8–11, Paumotu islands.

On the radula of *Engina* see above (p. 526).

Marginellidæ.

The radula of *Marginella quinqueplicata* and *elegans*, *Volvaria philippinarum* and sp.?, *Cystiscus capensis* and *Persicula clandestina* are described and figured by Troschel, *l. c.* pp. 57–60, pl. 5. figs. 6–11. All have only one plate in each series, like the Volutidæ; but it is transversely elongate and multicuspidate, except in *Persicula*, in which it is short, and has only two blunt lobes on each side of the median point, therefore resembling more that of the *Volutidæ*. The genus *Cylindra* (Schumacher), hitherto placed among the *Mitræ*, agrees in the radula with *Marginella* and *Volvaria*, and is transferred to this family by Troschel, who figures that of *C. nucea* (Meuschen), fig. 7; in another species, *C. dactylus*, he could not find a radula (like Dr. Gray), but he has no doubt that there will be one of similar type, as may be inferred from the similarity of the shell.

[*Erato*] *Marginella lævis*, Jeffr. Brit. Conch. iv. p. 400.

Erato schmeltziana, sp. n., Crosse, Journ. Conch. xv. p. 301, pl. 11. fig. 5, Feejee Islands.

Marginella mariei, sp. n., Crosse, *l. c.* p. 177, pl. 5. fig. 2, New Caledonia.

Marginella polita=*cylindracea* of Pease, Proc. Zool. Soc. 1862, *M. pacifica*, *pyriformis*, and *paumotensis*, spp. nn., Pease, Am. Journ. Conch. iii. pp. 280, 281, pl. 23. figs. 19–22, Tarawa and Paumotu Islands.

Volutella elongata, sp. n., Pease, Am. Journ. Conch. iii. p. 281, pl. 23. fig. 23, Fanning Island, Polynesia.

Volvaria (*Volvarina*) *pusilla*, sp. n., H. Adams, Proc. Zool. Soc. 1867, p. 303, pl. 19. fig. 1, Mauritius.

PROBOSCIDIFERA TÆNIOGLOSSA.

DOLIIDÆ and CASSIDIDÆ.

Dolium variegatum (Lam.)=*kieneri* (Phil.)=*chinense* (Desh.), from Hakodate; its varieties examined by Schrenck, *l. c.* pp. 401–403; from Yokohama, Martens, Preuss. Exped. i. p. 138. The same Japanese form described as a distinct species, *D. japonicum*, from the Bay of Yeddo, by Lischke, Mal. Blätt. xiv. p. 170, and figured in Dunker's Novitat. Conch. pls. 35 and 36.

Cassis coronadoi, sp. n., Crosse, Journ. Conch. xv. p. 64, Cuba.

RANELLIDÆ.

Triton nodiferus (Lam.) and *T. cutaceus* (L.) dredged at Guernsey by Mr. Lukis. *T. elegans* (Thomps. Ann. & Mag. N. H. xv.) is not British, but proves to be a shell common at the Sandwich Islands, *Hindsia angusticostata* (Pease), Jeffr. Brit. Conch. iv. pp. 300–305.—The first two species are also recorded from the coast of Brittany by Taslé, Moll. of the Department of Mobihan.

Triton olearium (L.), exactly corresponding to Reeve's fig. 32, from Tahiti, and *Tr. sauliæ* (Reeve), both from the Bay of Yeddo; the differences of the latter from *T. australis* and *nodiferus* pointed out by Lischke, Mal. Blätt. xiv. pp. 168, 169.

Tritonium corrugatum (Lam.). The interior of the upper whorls is pro- with numerous septa. Crosse, Journ. Conch. xv. p. 325.

Ranella] *Bursa* (*Apollon*) *proditor* (Frauenfeld, see Zool. Record, ii. p. 247), figured Reis. Novar. Moll. pl. 1. fig. 1.

CYPRÆIDÆ.

Cypræa mauritiana, *caput serpentis*, and *moneta* received from Hakodate, Schrenck, *l. c.* pp. 457–461.—*C. tigris*, *arabica*, *vitellus*, *lynx*, and *caput serpentis*, from the Bay of Yeddo. Lischke, Mal. Blätt. xiv. pp. 170, 171. [The Recorder has found some of these species in the shops of Yokohama, but never on the sea-shore, and therefore is not convinced that they are really indigenous in Japan. Preuss. Exped. i. p. 141.]

Cypræa europæa (Mont.), Jeffreys, Brit. Conch. iv. p. 403.

Trivia affinis, sp. n., Marryat, Ann. & Mag. Nat. Hist. xx. p. 215, West Indies.

VELUTINIDÆ.

Velutina. Two species are found in Great Britain, viz. *plicatilis* (Müll.)=*flexilis* (Mont.) and *lævigata* (Penn.); very young shells of the last have a small umbilicus. Jeffreys, Brit. Conch. iv. pp. 238–242.

Velutina zonata (Gould) does not belong to the genus *Otina*, but is a really marine, deep-water shell. Binney, Land- and Freshwater Shells of North Am. part i. p. 22, with a woodcut.

LAMELLARIIDÆ.

Lamellaria. One species only is found in Great Britain, *L. perspicua* (L.), *L. tentaculata* (Mont.) being the female, which makes her nest in compound Ascidians of the genus *Leptoclinum*, according to Mr. Peach. Jeffreys, Brit. Conch. iv. pp. 234–238.

Naticidæ.

Natica. The British species are given in the following manner by Jeffreys:—

A. Shell rather thin, with a produced spire; umbilicus small [*Amaura*, Möller].

1. *islandica* (Gmel.)=*helicoides* (Johnst.)=*canaliculata* (Gould)=*cornea* (Möller).

B. Shell more or less solid, with a short or compressed spire.

2. *grönlandica* (Beck)=*pusilla* (Gould)=*bulbosa* (Reeve); 3. *sordida* (Phil. not Swains.); 4. *catena* (Da Costa)=*monilifera* (Lam.); 5. *alderi* (Forbes)=*nitida* (Forbes, not Donovan)=*intermedia* (Phil.); 6. *montacuti* (Forbes). The arctic *N. clausa* (Brod.)=*affinis* (Gmel.) is only found in glacial beds, and not living within Great Britain. Brit. Conch. iv. pp. 212–229.

Natica clausa (Brod. & Sow.), including a flatter variety, and *N. janthostoma* (Desh.) common in the Gulf of Tartary; *N. pallida* (Brod. et Sow.), scarcely to be distinguished, Bay of Castries; *N. bicincta*, Schrenck, pl. 17. figs. 1–3, and *N. bicolor* (Phil.), Hakodate. Schrenck, *l. c.* pp. 373–380.—Lischke enumerates as Japanese species received from the Bay of Yeddo, *N. janthostoma*, which he keeps distinct from *clausa*, and *N. lamarckiana* (Récluz)=*robusta* (Dunker), allied to, but different from, *bicolor*. Mal. Blatt. xiv. p. 171.

Sigaretus souverbii, sp. n., Folin, Méléagrinicoles, p. 68, pl. 6. figs. 8, 9, on pearl-oysters from Panama.

Amaurella, g. n., A. Adams. *A. glabrata* and *A. semistriata*, spp. nn., third species was formerly described as *Macrocheilus japonicus*; all from Japan. A. Adams, Proc. Zool. Soc. 1867, p. 311.

Cerithiopsidæ.

Cerithiopsis. Five British species are described by Jeffreys:—*tubercularis* (Mont.)=*Cerithium pygmæum* of Philippi; *barleei*, sp. n., Plymouth, Falmouth, Cork, and Galway; *pulchella* (Jeffr.); *metaxa* (Chiaje)=*Cerithium angustissimum*, Forbes=*C. creperum* and *cribrarium* (S. Wood)=*crosseanum* (Tiberi); finally *costulata* (Möller as *Turritella?*)=*Cerithium arcticum*, Mörch. Brit. Conch. iv. pp. 265–273.

Alaba phasianella, sp. n., Angas, Proc. Zool. Soc. p. 113, pl. 13. fig. 18, Port Jackson.

Proboscidifera ptenoglossa.

Scalariidæ.

Scalaria. Four British species, viz. *turtonæ* (Turt.)=*tenuicosta* (Mich.), *communis* (Lam.), *trevelyana* (Leach), and *clathratula* (Adams)=*pulchella* (Bivona), are described from living specimens by Jeffreys, Brit. Conch. iv. pp. 89–97.

Scalaria uncinaticosta (Orb. Moll. Cub.)=*algeriana* (Weinkauff), Mediterranean. Gonzalez Hidalgo, Journ. Conch. xv. p. 372.

Scalaria perplexa and *decussata*, Sandwich Islands, *paumotensis* and *crispata*, Paumotu, *crenulata* and *symmetrica*, Tahiti, are new species described by Pease, Am. Journ. Conch. iii. pp. 288–290, pl. 24. figs. 10–14.

Scalaria bellistriata, *subcoronata*, and *crebricostata*, spp. nn., Carpenter, Proc. Calif. Acad. Nat. Sc. 1866, pp. 221–222, Monterey.

Scala (*Opalia*?) *zelebori* (Dunker), Reis. Novar. Moll. pl. 1. fig. 6.

Opalia spongiosa and *retiporosa*, spp. nn., Carpenter, Proc. Calif. Acad. Nat. Sc. 1866, p. 222, California.

Proboscidifera gymnoglossa.

Pyramidellidæ.

Our knowledge of this family, as well as of *Rissoidæ*, has been considerably advanced by Mr. Jeffreys, who has worked out the known species with their synonyms. The peculiarity that the first or top whorls are sinistral is taken by him as the principal character of the family.

Odostomia (Flem.). Mr. Jeffreys gives an elaborate monograph of this genus in its widest sense (Brit. Conchol. iv. pp. 107–174). It coincides with *Turbonilla* of Lovén, including *Chemnitzia* (Orb.) and *Eulimella* (Forbes). The author opposes the attempts of some recent conchologists who manufacture new genera on the most trivial grounds. The British species are, according to him, the following:—

A. Typical *Odostomiæ*. Oval or oblong, generally smooth or only spirally striated, a few reticulated; pillar slightly curved, and invariably furnished with a tooth.

1. *minima* (Jeffr.), the smallest species known; 2. *nivosa* (Mont.) = *cylindrica* (Alder, F. & H.) = *annæ* (Macg.); 3. *truncatula* (Jeffr.); 4. *clavula* (Lovén); 5. *lukisi* (Jeffr.); 6. *albella* (Lovén) = *rissoides*, var., pl. 96. f. 5 of Forbes & Hanley; 7. *rissoides* (Hanley) = *scalaris* (Macg. not Phil.), with the varieties *alba* (Jeffr.), *nitida* (Alder), *glabrata* (Forb. & Hanl., but not Mhlfld. & Phil.), *dubia* (Jeffr.); 8. *pallida* (Mont.) = *eulimoides* (Hanl.) = *oscitans* (Lovén), varieties are *crassa* (Thomps.), *notata* and *angusta* (Jeffr.); 9. *conoidea* (Brocchi) = *sicula* and *erythræa* (Phil.); 10. *umbilicaris* (Malm); 11. *acuta* (Jeffr.), a variety = *umbilicata* (Alder); 12. *conspicua* (Alder); 13. *unidentata* (Mont.); 14. *turrita* (Hanley) = *unidentata*, var. 1, of Forb. & Hanl., a variety of it is *striolata* (Alder); 15. *plicata* (Mont.); 16. *inculpta* (Mont.); 17. *diaphana* (Jeffr.); 18. *obliqua* (Alder), a variety of it = *warreni* (Thomps.); 19. *dolioliformis* (Jeffr.); 20. *decussata* (Mont. as *Turbo*).

B. *Turbonilla* or *Chemnitzia*. Elongate, longitudinally ribbed or reticulated; pillar straight and seldom furnished with a tooth. This tooth has been observed in Nos. 26, 30, and 31.

21. *clathrata* (Jeffr.), very rare; 22. *indistincta* (Mont.) = *balliæ* (Thomps.) = *curvicostata* (S. Wood); 23. *interstincta* (Mont. not Adams) = *deshayesiana* (Récluz), varieties are *terebellum* (Phil.) and *suturalis* (Phil. as *Rissoa*) = *oblonga* (Macg.); 24. *spiralis* (Mont.); 25. *eximia* (Jeffr.) = *barleei* (Clark); 26. *fenestrata* (Forbes) = *weinkauffi* (Dunker); 27. *excavata* (Phil.) = *harveyi* (Thomps.); 28. *scalaris* (Phil.), a variety of it = *rufescens* (Forb.); 29. *rufa* (Phil.) = *fasciata* (Récluz), a variety of it = *fulvocincta* (Thomps.); 30. *lactea* (L.) = *elegantissima* (Mont.) = *campanellæ* (Phil.); 31. *pusilla* (Phil. not C. B. Adams). N.B. *O. formosa* (Jeffr.) is a distinct species, but its habitat uncertain.

C. *Eulimella*. Elongate, smooth, and polished; pillar straight, very rarely furnished with a tooth (No. 33).

32. *scillæ* (Scacchi) = *crassula* (Jeffr.) = *macandrei* (Forbes); 33. *acicula*

(Phil.)=*producta* (Lovén), varieties of it *turris* (Forbes), *ventricosa* (Forbes) = *affinis* (Forb. & Hanl.), and *obeliscus* (Jeffr.); 34. *nitidissima* (Mont.), the most slender of all the *Odostomiæ*.

Odostomia striata, polita, rubra, rosacea, gracilis, and *debilis*, spp. nn., Pease, Am. Journ. Conch. iii. pp. 291, 292, pl. 24. figs. 16–21, Paumotu, Tahiti, and Hawaii.—*O. lævis, lactea*, (*Parthenia*) *pascoi*, and *krefftii*, spp. nn., Angas, Proc. Zool. Soc. 1867, p. 112, pl. 13. figs. 10–13, Port Jackson.

Turbonilla elongata, sp. n., Pease, Am. Journ. Conch. iii. p. 293, pl. 24. fig. 22, Paumotu.—*T. nitida*, sp. n., Angas, Proc. Zool. Soc. p. 112, pl. 13. fig. 9, Port Jackson.—*T. festiva*, sp. n., Folin, Méléagrinicoles, p. 49, pl. 5. figs. 4–6, on pearl-oysters from Panama.

Chemnitzia vancouverensis, sp. n., Baird, in Lord's Naturalist in Vancouver's Island, vol. ii. p. 358, Esquimalt Harbour.—*Ch. chocolata* and *subcuspidata* spp. nn., Carpenter, Proc. Calif. Acad. Nat. Sc. 1866, p. 220, California.—*Ch. rangii*, sp. n., Folin, Méléagrinicoles, p. , pl. . fig. , on pearl-oysters from Panama.

Chrysallida pumila and *cincta*, spp. nn., Carpenter, *l. c.* pp. 219, 220, California.

Oscilla is a new genus, with the shell imperforate, transversely ridged, with a strong median columellar plait. *O. lirata* and *O. sulcata* (= *Odostomia* (*Evalea*) *lirata* and *sulcata*, A. Adams, Ann. & Mag. Nat. Hist. 1860); *O. cingulata* (= *Monoptygma cingulata*, A. Adams in the same periodical, 1861); *O. annulata* (= *Obeliscus annulatus*, A. Adams, in Sowerby's Thesaurus); *O. circinata*, sp. n., all from the Japanese islands. A. Adams, Proc. Zool. Soc. 1867, p. 311.

Iolæa, A. Adams, substituted for *Iole*, A. Adams, Ann. & Mag. Nat. Hist. 1860, because this latter name is preoccupied for a bird; the columellar plait exists in the first whorls, but often disappears in the last. *I. scitula* (A. Adams, 1860), *I. sculptilis* (= *Menestho sculptilis*, A. Adams, Ann. & Mag. Nat. Hist. 1861), *I. amabilis*, sp. n., all three from the Japanese islands. A. Adams, *l. c.* p. 310.

Agadina gouldi and *stimpsoni*, spp. nn., A. Adams, Proc. Zool. Soc. p. 309, pl. 19. figs. 22 & 23, Island Kino-Osima; Japan.

Apicalia scitula, sp. n., H. Adams, *l. c.* p. 308, pl. 19. fig. 18, Borneo.

Cythna albula, sp. n., Carpenter, Proc. Calif. Acad. Nat. Sc. 1866, p. 219, San Pedro, California.

Amphithalamus lacunatus, sp. n., Carpenter, Proc. Calif. Acad. Nat. Sc. 1866, p. 218, San Pedro, California.

Diala acuta and *marmorea*, spp. nn., Carpenter, *l. c.* p. 218, Monterey.

Styloptygma aurantiaca, sp. n., Angas, *l. c.* fig. 14, Port Jackson.

Aclis (Lovén). Jeffreys enumerates the following five British species:—*unica* (Mont.), *ascaris* (Turt.), *supranitida* (S. Wood), *walleri*, sp. n., Jeffr. p. 105, and *gulsonæ* (Clark). He thinks that the first and last are aberrant forms, which, perhaps, are better separated, proposing for the first the generic name *Graphis*, for the last that of *Menippe* [already employed in the class of Crustacea, the former by botanists for Lichens]. He does not give generic characters, but describes at length the living animal and shell of both. Brit. Conch. iv. pp. 100–107.

Mathilda sinensis, sp. n., Fischer, Journ. Conch. xv. p. 304, pl. 9. fig. 3, Chusan. This genus was created two years ago in the same journal for ter-

tiary shells, one of which, *Turbo quadricarinatus* (Brocchi) = *Turritella quadricarinatus* (Brown), is said to be also found living in the Mediterranean.

Toxifera sive Toxoglossa.

The innermost layers of the shell are reabsorbed during growth in *Conus* and *Oliva*, but never in *Pleurotoma* and *Ancillaria*. A. von Koenen, on *Conorbis* and *Cryptoconus*, Marburg, 1867, 4to, p. 2.

Conidæ.

Conus maculosus, Sow. (=*maculatus*, Sow. Thes. fig. 296=*anemone*, var. *b*, Reeve, Conch. Ic. 139*a*), in Port Jackson; distinct from the American *anemone*. Angas, Proc. Zool. Soc. 1867, p. 204.

Conus blanfordianus, sp. n., Crosse, Journ. Conch. xv. p. 66, locality unknown.

Pleurotomidæ.

Pleurotoma carpenteri, godfroidi, leucolabratum [sic!], *pustulosum, nodosum, hirsutum*, and *imperfectum* are new species described by Folin, Méléagrinicoles, pp. 53–60, pl. 5. figs. 12–17; all on pearl-oysters from Panama.

Pleurotoma bicarinata (Pease, Proc. Zool. Soc. 1862) figured Am. Journ. Conch. iii. pl. 13. fig. 23, Kingsmill Islands.

Drillia coxi and *metcalfei*, spp. nn., Angas, Proc. Zool. Soc. p. 113, pl. 13. figs. 15 & 16, Port Jackson.—*D. lauta* and *exilis*, spp. nn., Pease, Am. Journ. Conch. iii. p. 220, pl. 15. figs. 18 & 19, Paumotu and Tahiti.

Pleurotoma (*Clavatula*) *striata* (Kien.), Bay de Castries; *lactea* (Reeve), Gulf of Tartary; *erosa* (Schrenck), pl. 17. figs. 5–7, Bay de Castries; and *virginea* (Val.), Hakodate. Schrenck, *l. c.* pp. 404–409.

Defrancia and *Mangelia*. Jeffreys introduces the form of the apex as a new systematic character for the small *Pleurotoma*-like European shells. He unites those in which it is somewhat stiliform, as in *Cerithiopsis*, finely pointed, and minutely reticulated, into a genus, *Defrancia*, whilst those in which the apex is regular and blunt are reunited by him into the old genus *Pleurotoma*, the notch in the outer lip being in some of them, as *P. nivalis* (Lovén), as deep as in the typical exotic species. All the species of *Defrancia* in this sense are without operculum; among the *Pleurotomæ* there are some with and others without operculum. The British species are arranged by the author in the following manner (Brit. Conch. iv. pp. 360–399):—

I. *Defrancia*.

1. *teres* (Forbes)=*borealis* (Lovén)=*barbierii* (Brusina); 2. *gracilis* (Mont.)=*comarmondi* (Mich.); 3. *leufroyi* (Mich.)=*Fusus boothi* (Reeve); 4. *linearis* (Mont.); 5. *reticulata* (Renier), including, as variety, *formosa*, or the *Mangelia purpurea*, var. *asperrima* of Forb. and Hanl.; 6. *purpurea* (Mont.), with the variety *philberti* (Mich.).

II. *Pleurotoma*.

A. Inoperculated.

1. *striolata* (Scacchi)=*smithii* (Forbes)=*lovenæana* (Reeve); 2. *attenuata* (Mont.)=*villiersi* (Mich.)=*nuperrima* (Tiberi); 3. *costata* (Donov.); 4. *rugulosa* (Phil.)=*sandrii* (Brusina); 5. *brachystoma* (Phil.)=*tiarula* (Lovén); 6. *nebula* (Mont.)=*ginanniana* (Phil.); 7. *lævigata* (Phil.).

B. operculated. [*Bela* of Leach and H. & A. Adams.]

8. *nivalis* (Lovén); 9. *septangularis* (Mont.), to which probably belong

also *bertrandi* (Payr.) and *secalina* (Phil.); 10. *rufa* (Mont), with the varieties *lactea*, *semicostata*, *ulideana* (Thomps.), *cranchii* (Brown as *Fusus*), and *angusta*; 11. *turricula* (Mont.), including as variety *Tritonium roseum* of Sars; 12. *trevelyana* (Leach) = *woodiana* (Möller).

Bela americana, sp. n., = *Fusus turricula* (Gould, not Montagu), Packard, Mem. Bost. Soc. Nat. Hist. p. 283, pl. 7. fig. 11, the American representative of the European *B. turricula*. Other species from Labrador are:—*B. nobilis* (Möller), *scalaris* (Möller), *woodiana* (Möller) = *Fusus harpularius*, Gould, and *B. exarata* (Möller) = *Pleurotoma rugulosa* of Reeve, Conchol. Icon. fig. 345; *B. decussata* (Stimps.), *pleurotomaria* (Couth.) = *rohlii* (Beck), *pyramidalis* (Stimps.), *cancellata* (Migh.), which is different from *pingelii* (Möller); *B. violacea* (Stimps.) and *borealis* (Reeve) = *livida* (Möller). Packard, *l. c.* pp. 286, 287.

Lachesis, see MURICIDÆ (p. 525).

Pleurotoma (*Defrancia*) *crassilabrum* (Reeve), from Hakodate, Schrenck, *l. c.* p. 409.

Clathurella zonata, sp. n., Angas, Proc. Zool. Soc. p. 113, pl. 13. fig. 17, Port Jackson.—*Cl. tumida*, *violacea*, and *canaliculata*, spp. nn., Pease, Am. Journ. Conch. iii. pp. 218, 219, pl. 15. figs. 15–17, Paumotu archipelago; *Cl. maculosa*, Pease (Proc. Zool. Soc. 1862), figured *l. c.* fig. 16.

Mangelia splendida, sp. n., A. Adams, Proc. Zool. Soc. p. 309, pl. 19. fig. 26, Gotto Islands, Japan.

Cithara decussata, *brevis*, *paucicostata*, and *dædalea*, spp. nn., Pease, Am. Conch. Journ. iii. pp. 217, 218, pl. 15. figs. 10–13, Paumotu archipelago and Tahiti.

Daphnella crenulata, *varicifera*, and *curta*, spp. nn., Pease, *l. c.* p. 221, pl. 15. figs. 20–22, Paumotu.

TEREBRIDÆ.

Terebra fulgurata (Phil.), Gulf of Tartary. Schrenck, *l. c.* p. 450.

Acus (*Abretia*) *bicolor* and *assimilis*, spp. nn., Angas, Proc. Zool. Soc. 1867, p. 111, pl. 13. figs. 7 & 8, Port Jackson.

EULIMIDÆ.

Eulima. Jeffreys describes as British the following six species:—1. *polita* (L.), with a variety, *rubrocincta*; 2. *intermedia* (Cantr.) = *nitida* of Philippi, not of Lamarck; 3. *distorta* (Desh.); 4. *stenostoma* (Jeffr.); 5. *subulata* (Donovan); and 6. *bilineata* (Alder) [rejecting as "undistinguishable" the so-called genus *Leiostraca*]. Brit. Conch. iv. pp. 200–210.

Eulima venusta, *exilis*, and *inflexa*, spp. nn., Pease, Am. Journ. Conch. iii. p. 223, pl. 24. figs. 24–26, Tahiti and Paumotu.

Eulima adamantina, *proca*, *gibba*, *elegantissima* [very near *Liostraca samoënsis*, according to Crosse], *elodia*, and *opalina*, spp. nn., Folin, Méléagrinicoles, pp. 62–66, pl. 6. figs. 2–7. All on pearl-oysters from Panama.

Eulima conspecta and *rutila*, spp. nn., Carpenter, Proc. Calif. Acad. Nat. Sc. 1863, p. 221, San Pedro and Monterey, California.

Leiostraca. An account of this genus is given by Sowerby in Reeve's Conchologia Iconica, pts. 256 & 257; new species are:—*L. acutissima*, Sydney; *L. pyramidalis*, *subventricosa*, and *vincta*, localities unknown.—*L. samoënsis*, sp. n., Crosse, Journ. Conch. xv. p. 300, pl. 11. fig. 2, Samoa Islands.

Niso. An account of this genus is given by Sowerby in Reeve's Conchol Ic. parts 256 & 257; *N. sandvichensis*, sp. n., Sandwich Islands.

Mucronalia gracilis, sp. n., Pease, Am. Journ. Conch. iii. p. 294, pl. 24. fig. 27, Tahiti.

Stiliferidæ.

Stilifer. A general account of the genus, and a detailed description of the British *St. turtoni* (Brod.), which is found attached to several species of *Echinus*, is given in Jeffreys's Brit. Conch. iv. pp. 189–200.

Stilifer deformis, sp. n., Pease, Am. Journ. Conch. iii. p. 293, pl. 24. fig. 23, Paumotu.

Styliferina turrita, sp. n., Carpenter, Proc. Calif. Acad. Nat. Sc. 1866, p. 219, San Pedro, California.

Rostrifera (*Tænioglossa*).

Strombidæ.

Strombus japonicus (Reeve), Gulf of Tartary. Schrenck, *l. c.* p. 464.

Pterocera bryonia (Gmel.), Hakodate. Schrenck, *l. c.* p. 463.

Ovulidæ.

Ovula patula (Penn.), Jeffreys, Brit. Conch. iv. p. 407.

Trichotropidæ.

Trichotropis borealis, described and figured in Jeffreys's Brit. Conch. iv. p. 245, pl. 4. fig. 2.

Torellia, gen. nov., Lovén, MS. Shell globose, covered with a velvety epidermis; spire very short, apex depressed; mouth roundish, furnished with a blunt tubercle on the pillar at its base; groove internal, scarcely perceptible; operculum horny; lingual dentition like that of *Capulus*. *T. vestita* (Jeffr.) = *Reclusia aperta* (Jeffr. Ann. & Mag. Nat. Hist. 3rd series, vol. iii.), east coast of Shetland and coast of Norway. Jeffreys, Brit. Conch. iv. p. 244, pl. 4. fig. 1.

Aporrhaidæ.

Aporrhais macandreæ, sp. n., Jeffreys, Brit. Conch. iv. p. 253 = *pes-carbonis* of Forbes and Hanley, not of Brongniart, which is an Upper-Miocene fossil, Shetland Islands and Norway.

Cerithiidæ.

Cerithium gibberosum (Dunker), Reis. Novar. Moll. pl. 1. fig. 7.

Cerithium moreleti, *kanoni*, and *destrugesi*, spp. nn., Folin, Méléagrinicoles, pp. 68–71, pl. 6. figs. 10–12, on pearl-oysters from Panama.

Colina pygmæa, sp. n., H. Adams, Proc. Zool. Soc. p. 308, pl. 19. fig. 19, Borneo. *C. gracilis* (H. Adams) is recognized by the author as identical with *Cerithium* (*Colina*) *coarctatum*, published in the same year (1866) by Sowerby.

Triphoris cucullatus, sp. n., Folin, Méléagrinicoles, p. 72, pl. 6. fig. 13, on pearl-oysters from Panama.

Pyrazus, *Lampania*, *Cerithidea*, *Tympanotonos*, and *Potanides*. These genera are treated of in Reeve's Conchologia Iconica, parts 256 and 257, 8 plates.

[*Lampania*] *Cerithium cumingi* (Crosse), from Hakodate, described by Schrenck, *l. c.* p. 313.

Fastigiella squamulosa, sp. n., Pease, Am. Journ. Conch. iii. p. 290, pl. 24. fig. 15, Paumotu.

Melaniidæ.

Melania amurensis (Gerstf.)=*heukelomiana* (Reeve), *calculus* (Reeve), and *fortunei* (Reeve), Mantchuria. Schrenck, *l. c.* pp. 627–634.

Melania taitensis and *luteola* (Dunker), Reis. Novar. Moll. pl. 1. figs. 8 & 9.

Melanopsis gassiesiana, sp. n., Crosse, Journ. Conch. xv. p. 435, pl. 12. fig. 7, New Caledonia.

[*Pirena*] *Faunus terebralis*, *cantori*, and *pagoda* are united with *ater* (L.), *Melanatria plicata* with *fluminea* (Gmel)=*spinosa* (Fér.), Gray, Ann. & Mag. Nat. Hist. xx. p. 78.

Litorinidæ.

Litorina grandis (Midd.) is common in the Bay de Castries and Mantchuria, as well as in the northern Japanese islands, Sachalin and Yesso; the form of the young shell is rather variable, sometimes much broader, as in the full-grown, and as broad as long. *L. tenebrosa* (Mont.)=*sitchana* (Phil.)=*kurila* (Midd.), with the sculpture and colour very variable; common in the northern parts of the Pacific, from Sitka along the Aleutes, Kamtschatka, and the Kurilos, to Sachalin, Yesso, and the coast of Mantchuria. *L. bremicula* (Phil.)=*balteata* (Reeve)=*sowerbiana* (Crosse), Northern China, Japan, and Mantchuria. *L. mandshurica*, sp. n., pl. 14. figs. 14–20, Bay de Castries; *L. granularis* (Gray), Nangasaki and Hakodate; *L. modesta* (Phil.), Bay de Castries. Schrenck, *l. c.* pp. 319–341.

[*Litorina*] *Melarhaphe subgranosa* (Dunker), Reis. Novar. Moll. pl. 1. fig. 10.

*Cremnobates** (Blanf.). The radula of this curious *Littorina*-like land-shell, which was discovered by Blanford on naked rocks of the Western Ghats near Bombay, has been examined by Troschel, and proves to be that of a *Littorina*. A minute difference is, that the median lamina wants the lamellar expansions at its base, as far as this can be ascertained from the preparation of one specimen. The same are also absent in *Tectus* (Montf.), which also is very near to *Littorina*. Troschel, Arch. f. Naturgeschichte, vol. xxxiii. pp. 90–94, pl. 2. fig. A.

Risella kielmannseggi (Zelebor), Reis. Novar. Moll. pl. 1. fig. 12.

Lacuna vincta (Montagu)=*quadrifasciata* (Montagu)=*fusca* (Binney) is a circumpolar species, having been found at Hakodate, island of Yesso. The varieties of colour and of the breadth of the umbilical slit are indicated. Schrenck, *l. c.* p. 315–318.

Fossarus mediocris, sp. n., Folin, Méléagrinicoles, p. 50, pl. 5. fig. 8, on pearl-oysters from Panama.

Fossarina picta, sp. n., A. Adams, Proc. Zool. Soc. 1867, p. 312, pl. 19. fig. 26, Japan.

Isapis obtusa, sp. n., Carpenter, Proc. Calif. Acad. Nat. Sc. 1866, p. 217, California.

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* This name is preoccupied for a genus of fishes.

Planaxidæ.

Planaxis nicobaricus (Zelebor), Reis. Novar. Moll. pl. 2. fig. 1.

Rissoellidæ.

This family is established by Clark, under the name of *Heterophrosynidæ*, and accepted by Jeffreys (Brit. Conch. iv. pp. 55–63), on account of the operculum having an excentric nucleus like that of *Buccinum* and an internal process analogous to that of *Neritina*. It comprises the following two genera :—

Barleeia (Clark). Snout and eyes as in *Rissoa*; shell solid and smooth. One British species, *rubra* (Mont.)=*fulva* (Mich. as *Rissoa*); varieties *unifasciata* (Mont.) and *pallida*.

Jeffreysia (Alder). Snout deeply cloven; eyes behind the tentacles; shell thin, smooth, and glossy; lingual armature as in *Rissoa*. Three British species: *diaphana* (Alder), *opalina* (Jeffr.), and *globularis* (Jeffr.).

Rissoidæ.

Iravadia, g. n., Blanford. Testa imperforata, turrita, spiraliter costata, solida, epidermide tecta; apertura ovata, integra, antice obsolete effusa; peristomate recto, extus variciformi-incrassato, intus dilatato. Differs from *Rissoina* by the epidermis, the spiral sculpture, and the peristome being neither sinuated above nor projecting below, and in the columellar margin being simply curved in front and not excavated, from *Hydrobia* and *Amnicola* by the variciform peristome. Operculum unknown. *I. ornata*, sp. n., Myittaya, a branch of the Bassein river, delta of the Irawady in salt water. Blanford, Journ. As. Soc. ii. p. 56, pl. 2. figs. 13, 14.

Jeffreysia? *translucens*, sp. n., Carpenter, Proc. Calif. Acad. Nat. Sc. 1866 p. 219, San Diego, California.

Rissoina frauenfeldi, sp. n., Schwartz v. Mohrenstern, Reis. Novar. Moll. p. 10, pl. 2. fig. 13, Port Jackson; *R. media* of the same author, found on the Nicobar Islands; *R. hanleyi*, at Sydney, by the same expedition, ibid., *l. c.*

Rissoina variegata, turricula, smithi, and *cincta*, spp. nn., Angas, Proc. Zool. Soc. 1867, pp. 113, 114, pl. 13. figs. 19–22, Port Jackson.

Rissoina semiplicata (Pease, Proc. Zool. Soc. 1862), *gracilis, costulata, tenuistriata, striatula, semicostata*, spp. nn., Pease, Am. Journ. Conch. iii. pp. 295, 296, pl. 24. figs. 27–32, Paumotu and Caroline Islands.—*Rissoina interfossa*, sp. n., Carpenter, Proc. Calif. Acad. Nat. Sc. 1866, p. 217, California.

[*Rissoina*] *Rissoa zeltneri*, sp. n., Folin, Méléagrinicoles, p. 47, pl. 5. fig. 1, on pearl-oysters from Panama.

Putilla, g. n., A. Adams. Shell smooth, solid, with thickened lip.—*P. lucida*, sp. n., Gotto Islands, Japan, in 54 fathoms. A. Adams, Proc. Zool. Soc. 1867, p. 312, pl. 19. fig. 312.

Gyriscus, g. n., Tiberi, Journ. Conch. xv. p. 302. Testa turbinata, conico-turrita, umbilicata; apex obtusus, vertice involuto; anfractus rotundati, transverse cingulati; apertura subcircularis, marginibus acutis, callo junctis, columellari reflexo. Operculum corneum, superne multistriatum, inferne processu styliformi præditum. Animal unknown. One species, *G. jeffreysianus*, sp. n., Sardinia, on corals. [Near *Rissoina*?]

Fenella pupoides, sp. n., Carpenter, Proc. Calif. Acad. Nat. Sc. 1866, p. 217, Monterey.

Rissoa. The British species are, according to Jeffreys's British Conchology, vol. iv., the following :—

A. Cancellated.

1. *striatula* (Mont.) = *carinata* (Da Costa) = *labiata* (Phil.) ; 2. *lactea* (Mich.) = *cancellata* (Beudant and Lamarck, as *Turbo*) ; 3. *cancellata* (Da Costa) = *cimex* of the older British conchologists = *crenulata* (Mich., Forbes, and Hanley) ; 4. *calathus* (F. & H.), probably only a variety of the following ; 5. *reticulata* (Mont.) = *beanii* (Hanley), its immature state is *textilis* (Phil.) ; 6. *cimicoides* (Forbes) = *sculpta* of Forbes and Hanley, not of Philippi ; 7. *jeffreysii* (Waller) ; 8. *punctura* (Mont.) ; 9. *abyssicola* (Forbes).

B. Ribbed lengthwise and spirally striated, outer lip reflected.

10. *zetlandica* (Mont.) = *cyclostomata* (Récluz) = *clathrata* (Phil.) ; 11. *costata* (Adams) = *exigua* (Mich.).

C. Mostly ribbed lengthwise and spirally striated, outer lip usually strengthened with a rib.

12. *parva* (Da Costa) = *obscura* (Phil.), variety *interrupta* (Adams) = *sarsii* of Forbes and Hanley, not of Lovén ; 13. *inconspicua* (Alder), a variety = *variegata* (Mohrenstern) ; 14. *albella* (Lovén), variety = *sarsii* (Lovén) ; 15. *membranacea* (Adams) = *labiosa* (Mont.) = *grossa* and *fragilis* (Mich.), varieties *venusta* (Phil.), *elata* (Scacchi) ; 16. *violacea* (Desm.) = *rufilabris* (Alder) = *lilacina* (Récluz), variety *porifera* (Lovén) ; 17. *costulata* (Alder, not Risso nor Searles Wood, var. *similis*, Scacchi) ; 18. *striata* (Adams) = *minutissima* (Mich.), variety *arctica* (Lovén) and *aculeus* (Stimps.).

D. Spirally striated or smooth, outer lip plain.

19. *proxima* (Alder) ; 20. *vitrea* (Mont.) ; 21. *pulcherrima* (Jeffr.) ; 22. *fulgida* (Adams) = *pygmæa* (Mich.) ; 23. *soluta* (Phil.), a variety = *alderi* (Jeffr.) ; 24. *semistriata* (Mont.) = *subsulcata* (Phil.) ; 25. *cingillus* (Mont.) = *vittata* (Donovan), perhaps Linné's *Helix pella*.

The so-called genera *Alvania, Onoba, Setia, Cingula, Cyclostrema* are very properly reunited with *Rissoa*. Brit. Conchol. iv. pp. 1–49.

Rissoa picta, sp. n., Jeffreys, Ann. & Mag. Nat. Hist. June 1867, xix. p. 435, Madeira.

Rissoa acutilirata, sp. n., Carpenter, Proc. Calif. Acad. Nat. Sc. 1866, p. 217, San Diego, California.

Rissoa flammea, sp. n., Pease, Am. Journ. Conch. iii. p. 297, pl. 24. fig. 33, Caroline Islands. [Hitherto no true *Rissoa* has been known from the tropical parts of the Indian and Polynesian seas ; and also this species, if we may judge from the figure, does not appear to be a true *Rissoa*, but rather something like an *Odostomia* ; the pillar-tooth of the latter genus is in some species so faint that it is very easily overlooked. See above, p. 535.]

Rissoa insignis, sp. n., Folin, Méléagrinicoles, p. 48, pl. 5. figs. 2–3, on pearl-oysters from Panama. H. Crosse, Journ. Conch. xvi. 1868, p. 218, proposes for this species a new genus, *Folinia*. [It somewhat resembles *R. exigua*, Mich.]

Rissoa frauenfeldi (Schwartz v. Mohrenstern, 1860, as *Alvania*), Reis. Novar. Moll. p. 10, pl. 2. fig. 13, Sydney ; *Alvania olivacea* (Orb.? ubi?) and *A. salebrosa*, sp. n., Sydney, Frauenfeld, Reis. Novar. Moll. p. 11, pl. 2. figs. 14 and 15. The author adds that Schwartz v. Mohrenstern considers these three to be the

same species.—*Alvania novarensis* [better *novaræ*], sp. n., Frauenfeld, *l. c.* p. 11, fig. 16, no locality indicated.—*Alvania stigmatica* (Schw. v. Mohrenst.), *l. c.* p. 12, fig. 17, Nicobar Islands.

[*Rissoa*] *Sabanæa flammea* and *incidata* [*incisa*], spp. nn., Frauenfeld, Reis. Novar. Moll. p. 12, pl. 2. figs. 18 and 19, both from Botany Bay.

Setia atropurpurea and *S. nitens*, spp. nn., Frauenfeld, *l. c.* p. 13, pl. 2. figs. 21 and 22, Botany Bay. [The former allied to the Recorder's *Hydrobia tasmanica*, but much smaller.]

Skenea planorbis (Fabr.) is the only British species, comprising some varieties of shape and colour; some other species referred by various authors to this genus belong to other genera, and even families. Jeffreys, Brit. Conch. iv. pp. 65, 66.

Hydrobia (Hartm.) is retained as a distinct genus by Jeffreys, on account of its foot wanting the opercular appendage or caudal filament, and its habitat being in brackish water only. The only British species is *ulvæ* (Penn.)=*anatina* (Poiret)=*muriatica* (Beudant) [the Recorder may add=*stagnalis* (Linné)]; varieties are=*barleei* (Jeffr.), *octona* (L.) [?], and *baltica* (Nilss.). Brit. Conch. iv. pp. 51–54.—The same species is described as *Paludinella stagnalis* from Hakodate and Japan by Schrenck, *l. c.* p. 312.

Hydrobia moitessieri, sp. n., Bourguignat, Moll. Nouv. fasc. vi. 1866, p. 191, pl. 31. figs. 8–11, and Rev. et Mag. Zool. p. 90, pl. 21. figs. 10–15. Allied to *H. gibba* (Drap.), which is figured for comparison on the same plate, figs. 1–7, both from Montpellier, Southern France. The other localities of *H. gibba*, given by various authors, are rather uncertain, other species having been probably confounded with it.—*H. reboudi*, sp. n., Bourguignat, *l. c.* vii. 1866, p. 218, pl. 33. figs. 19–21, Algeria.—*Hydrobia carinulata*, sp. n., Drouet, Moll. Côte d'Or, p. 90, springs in the limestone of the French department Côte d'Or.

[*Hydrobia*] *Bythinia baudoniana*, sp. n., Gassies, Malacol. Aquit. *l. c.* p. 23, fig. 7. In shape similar to *B. leachii* (Sheppard), but the whorls more distinct, the umbilicus larger, the operculum with a complete spire, red. In ditches of brackish marshes at Teich, intralittoral region to the left of the Garonne, together with *Limnæa glabra* and *Planorbis leucostoma*, var. *perezii* (Graëlls).

Hydrobia. Paladilhe, Rev. Zool. pp. 45–47, 88–95, describes the following species:—*H. eutropha*, sp. n., pl. 20. figs. 7–9, and *H. mabilleana*, sp. n., pl. 20. figs. 19–21, from the alluvium of the river Lez, Southern France; *H. ligurica*, sp. n., pl. 21. figs. 20–22, Finale; *H. etrusca*, sp. n., pl. 21. figs. 14–16, Montmorella near Florence; *H. macei*, sp. n., pl. 21. figs. 17–19, Cannes; *H. charpyi*, sp. n., pl. 20. figs. 7–9, Département du Doubs; *H. lusitanica* (=*Paludina gibba*, Morelet, not Drap.), sp. n., pl. 21. figs. 1–4, Coimbra; *H. gibba* (Drap.), pl. 20. figs. 5–9; *Amnicola confusa* (Frauenfeld), pl. 22. figs. 15–17.

The North-American freshwater species of *Rissoidæ* [genus *Hydrobia* in its wider sense] are arranged by Binney in the following manner:—

Genus *Bythinella* (Moq.-Tand.): *attenuata* (Haldem.), *nicklinïana* (Lea), *tenuipes* (Coop.), *binneyi* (Tryon), *obtusa* (Lea).

Genus *Tryonia* (Stimps.): *clathrata* (Stimps.), *protea* (Gould).

Genus *Cochliopa* (Stimps.): *rowellii* (Tryon).

Genus *Gillia* (Stimps.): *altilis* (Lea), *crenata* (Haldem.), and a new species as yet without name.

Genus *Somatogyrus* (Gill): *depressus* (Tryon), *isogonus* (Say), *integer* (Say).

Genus *Amnicola* (Gould): *sayana* (Anthony), *porata* (Say), *pallida* (Haldem.), *limosa* (Say), *decisa* (Haldem.), *cincinnatensis* (Anthony), *granum* (Say), *parva* (Lea), *orbiculata* (Lea), *longinqua* (Gould).

Genus *Fluminicola* (Stimps.): *nuttalliana* (Lea), *virens* (Lea), *fusca* (Haldem.).

Genus *Pomatiopsis* (Tryon): *lapidaria* (Say), *lustrica* (Say).

All the species are briefly described, and illustrated by woodcuts: the lingual dentition of *Bythinella nicklíniana*, p. 67; *Gillia altilis*, p. 74; *Somatogyrus depressus*, p. 76, *integer*, p. 79; *Amnicola sayana*, p. 66, *porata*, p. 80; *Fluminicola nuttalliana*, p. 89; *Pomatiopsis lapidaria*, p. 93. Binney, Land- and Freshwater Moll. N. Amer. iii. pp. 65–97 and 115.

Amnicola hindsii, sp. n., Baird, in Lord's Naturalist in Vancouver Island, vol. ii. p. 359, River Kootanie, British Columbia.

[*Hydrobia*] *Cingula australiæ*, sp. n., Frauenfeld, Reis. Nov. Moll. p. 14, pl. 2. fig. 23, Sydney.

Anabathron, g. n., Frauenfeld, Reis. Novar. Moll. p. 13, pl. 2. fig. 20, Botany Bay. A small *Rissoa*-like shell with two strong spiral keels, like *Pyrgula*, probably marine.

Lithoglyphus tricostatus and *L. conicus*, spp. nn., Brot, Journ. Conch. xv. pp. 68, 69, pl. 1. figs. 4 and 5, Uruguay, in the deeper parts of the river. Allied to *L. peristomatus* (Orb.).

Paladilhia masclaryana, sp. n., Bourguignat, Moll. Nouv. fasc. vi. 1866, p. 195, pl. 30. figs. 21–23, alluvium of the river Lez, near Montpellier.—*Paladilhia conica*, sp. n., Paladilhe, Rev. Zool. p. 48, pl. 20. figs. 10–15, alluvium of the river Lez.

Paludinidæ.

Paludina. The North-American species are arranged in the following manner by Binney (Land- & Freshw. Moll. N. Amer. iii. pp. 16–65, 113–115):—

Genus *Vivipara*: *intertexta* (Say), *subpurpurea* (Say), *multicarinata* (Haldem.), *contectoides* (Binney) = *lineata* (Küst.) [see on this species 'Zool. Record,' iii. p. 185], *georgiana* (Lea), *lineata* (Val.) [the Recorder supposes this to be = *bengalensis* (Lam.); the locality is erroneously given by Valenciennes, as this author has done in several other cases], *troostiana* (Lea), *coosaensis* (Lea), *inornata* (Binney).

Genus *Tulotoma* (Haldem.): *magnificum* (Conrad).

Genus *Melantho*: *ponderosa* (Say), *decisa* (Say), *coarctata* (Lea), *decampi* (Currier).—*Mel. gibba*, sp. n., Currier, Am. Journ. Conch. iii. p. 112, pl. 6. fig. 3, Michigan.

Genus *Liopax*: *cyclostomatiformis* (Lea) and *subcarinata* (Say).

All the species are briefly described and illustrated by numerous woodcuts; also the operculum of several species is figured, the lingual dentition of *subpurpurea* and *intertexta*, pp. 16, 18, and 22; *georgiana*, p. 30; *integra*, p. 35;

subcarinata, p. 55. In the last species there is the same sexual difference in the right tentacle as in the European species. The spurious or uncertain North-American species are also mentioned, pp. 60–65.

In later additional notes given by Binney in the French Journ. Conch. xv. pp. 430–432, *Paludina carinata* (Val.) and *lineata* (Val.) are rejected as American species, and the latter is identified with *bengalensis* (Lam.), the types of Valenciennes's species having been examined. [See on this point Martens in Mal. Blätt. xii. 1865, pp. 144–151; 'Record' for 1865, p. 258.]

Paludina scalaris (Jay), from Florida, is a good species, at least fifty specimens having been seen by J. G. Anthony, Am. Journ. Conch. iii. p. 104. It is referred to the genus *Physa*, after the example of Haldeman, by Binney, Monogr. Land- and Freshwater Shells N. Am. ii. p. 96, and iii. p. 62.

Paludina ussuriensis (Gerstf.) probably identical with *P. lecythoides* (Bens.), with three varieties, *plicata*, *carinata*, and *malleata*; *P. prærosa* (Gerstf.)= *pachya*, *clophila*, and *chloantha* (of Bourguignat), with three varieties, *lævigata*, *plicata*, and *striata*; and *P. limnæoides*, sp. n., pl. 26. figs. 2–6, are found in Mantchuria. Schrenck, *l. c.* pp. 605–622. [The Recorder may add that *P. lecythoides* appears to be the same species as *P. chinensis* (Gray, in Griffith's Anim. Kingd.), which latter name has priority. It is quite common throughout China, having been observed by himself at Canton and Shanghai.]

Larina ? burmana, sp. n., Blanford, Journ. As. Soc. ii. p. 61, pl. 2. fig. 1, Myittaya Creek, delta of the Irawady. The author is not certain whether it has affinities with *Amphibola* or *Velutina*, and has "a distinct impression that the shells possessed a horny operculum."

Bythinia tentaculata, var. *obesa*, of smaller size and more contracted than the type, the nucleus of the operculum very prominent. Intralittoral region to the left of the Garonne, Pool of Rivière, near Villandraut. Gassies, Malacol. Aquit. p. 23, fig. 6.

Bithinia ventricosa (Leach)=*leachii* (Shepp.) and *B. striatula* (Bens.) =*striata* (Gerstf. by mistake)=*manchourica* (Bourg.), from Manchouria. Schrenck, *l. c.* pp. 622–627.

Stenothira monilifera (Benson) figured by Blanford, Journ. As. Soc. ii. pl. 2. fig. 15, Irawady delta.

Valvatidæ.

Valvata piscinalis and *V. cristata* in Manchouria. Schrenck, *l. c.* pp. 634–637.

Valvata planorbulina et *V. exilis*, spp. nn., Paladilhe, Revue Zool. pp. 50, 51, pl. 21. figs. 23–26 and 27–30, near Montpellier.

The North-American species are, according to Binney, *V. tricarinata* (Say), *sincera* (Say), *pupoidea* (Gould), *humeralis* (Say), *virens* (Tryon), all briefly described and illustrated by woodcuts, Land- and Freshw. Moll. N. Am. iii. pp. 8–14; lingual dentition of *tricarinata*, pp. 8 & 9, operculum of the same, p. 8; living animal of *sincera*, p. 8.

Valvata jelskii (Crosse). O. A. Mörch stated that this is the young state of a *Lithoglyphus*. Am. Journ. Conch. iii. p. 106. H. Crosse says in reply that the *Lithoglyphus*= *Valvata menkeana* (Jelski) is of almost equal size with the species of *Valvata*. Journ. Conch. xv. p. 291.

Ampullariidæ.

[*Ampullaria*] *Pomus depressa* (Say). The living animal, several varieties of the shell, the operculum, jaw, and the lingual detention are illustrated by Binney, Land- and Freshwater Moll. N. Am. part iii. pp. 1–5, and 113. Several species erroneously referred to the North-American fauna are pointed out. Ibid. pp. 7, 8.

Saulea. This new genus is proposed by Dr. Gray for *Ampullaria vitrea* (Born) from Sierra Leone, and illustrated by a woodcut. Proc. Zool. Soc. 1867, p. 1000. [The Recorder has formed for this species a distinct section in the genus *Ampullaria*, *Ampullariæ fulguratæ*. Mal. Blätt. iv. 1857, p. 211.]

Turritellidæ.

Turritella erosa (Couth.) = *polaris* (Beck, Möller), Straits of Tartary. Schrenck, *l. c.* p. 341.

Turritella calata, sp. n., Mörch, in Dunker, Novitat. Conchol. p. 102, pl. 34. figs. 1, 2, Guinea?; *T. dura* (Mörch), var. ibid., p. 103, figs. 3, 4, Realejo, Central America.—*T. cooperi*, sp. n., Carpenter, Proc. Calif. Acad. Nat. Sc. 1866, p. 216, California.

Mesalia brevialis (Lam.) = *sulcata* (Gray); a variety of it = *Turritella varia* of Küster and Reeve; and *M. striata* (Adams) = *Scalaria subdecussata* of Cantraine, according to P. Fischer, Gonzalez Hidalgo, Journ. Conch. xv. pp. 394, 395.

Mesalia? tenuisculpta, sp. n., Carpenter, Proc. Calif. Acad. Nat. Sc. 1866, p. 216, San Diego, California.

Cæcidæ.

Cæcum. The shell is spiral at first, becomes simply arched in the later stages of growth, and finally loses the first spiral part. Twenty-eight species taken from pearl-oysters are enumerated, with short diagnoses. The genus is divided into four sections and three subsections. Folin, Méléagrinicoles, pp. 29–47.

The British species are *trachea* (Mont.) and *glabrum* (Mont.), but *annulatum* (Brown) is exotic. Jeffreys, Brit. Conch. iv. pp. 74–79.

Cæcum phronimum, Haiti; *ryssotilum*, West-Indian Islands, Venezuela, and Brazil; *irregulare*, Bahia; *paradoxum* and *uncinatum*, on pearl-oysters in the Gulf of Panama; *coronatum*, *insigne*, and *breve*, Jamaica; *clava*, Guadeloupe; *mirificum*, San Miguel, Pacific, are new species described by L. de Folin, Journ. Conch. xv. pp. 44–53, and figured on pls. 2 & 3.—*C. crebricinctum* and *C. cooperi*, spp. nn., Carpenter, Proc. Calif. Acad. Nat. Sc. 1866, pp. 215, 216, California.

Brochina someri, Pernambuco, and *Br. achirona*, Bahia, spp. nn., Folin, Journ. Conch. xv. pp. 56, 57, pl. 3.

Vermetidæ.

Vermetus imbricatus (Dunker), Bay of Yedo. Lischke, Mal. Blätt. xiv. p. 172; and Martens, Preuss. Exped. i. p. 138.

Calyptræidæ.

Dr. Gray (Proc. Zool. Soc. 1867, pp. 732–748) gives a review of this family, chiefly from an examination of the specimens in Cuming's collection. He multiplies the genera, but judiciously

reduces the number of the species. The genera adopted by him are the following :—

Tribe I. Trochitina.

1. *Trochita* (Schumacher), 1 sp., *radians* (Desh.).

2. *Clypeola*, gen. nov., *Cl. magellanica*=*Trochita clypeolum* of Reeve; *Cl. tenuis*, sp. n., New Zealand; *Cl. corrugata*=*Trochita corrugata* of Reeve.

3. *Trochella*, gen. nov: *Calyptræa maculata* (Quoy) and *Trochus calyptræformis* (Lam.).

Tribe II. Cryptaina.

4. *Crepipatella* (Less.), 4 sp., type *Crepidula dilatata* (Lam.).

5. *Crypta* (Humphr.), 7 sp., among which *aculeata* (Gmel.) and *porcellana* (L.), the first including two, the other five species of Broderip and some others of Nuttall, Reeve, &c.

6. *Garnotia* (Gray), with *aduncа* (Sow.).

Tribe III. Ergæina.

7. *Ergæa* (Ad.), with *walshii* (Hermannsen).

8. *Noicia*, gen. nov., with *chinensis*, sp. nov., p. 740.

Tribe IV. Mitrellina.

9. *Mitrella*, 4 sp., type *chinensis* (L.).

10. *Trochilina*, gen. nov., with *conica* (Brod.), *fastigiata* (Gould), *adspersa* (C. B. Adams), *mamillaris* (Brod.), *solida* (Reeve), *lichen* (Brod.).

11. *Poculina*, gen. nov., with *unguis* (Brod.), *poculum* (Reeve), *aurita* (Reeve).

Tribe V.

12. *Galerus* (Humphr., Ad.), with *extinctorium* (Lam.) and *licidus* (Reeve).

Tribe VI.

13. *Neleta*, gen. nov., with *serrata* (Brod.).

14. *Trelania*, gen. nov., with *radiata* (Brod.).

15. *Catillina*, gen. nov., with *pectinata* (Carpenter).

16. *Dispotea* (Ad.), with *striata* (Ad.).

17. *Crucibulum* (Schumacher), 5 sp., type *scutellatum* (Gray) with numerous synonyms.

Tribe VII. Calyptrina.

18. *Calyptra* (Humphr., Ad.), 7 sp., among which *equestris* (L.?) and *tectum-sinense* (Chemn.).

Galerus contortus, sp. n., Carpenter, Proceed. Calif. Acad. Nat. Sc. 1866, p. 215, Monterey.

Crepidula grandis (Midd.), Gulf of Tartary, well distinguished from *Cr. pallida* (Brod.), Schrenck, *l. c.* p. 383.—*Cr. walski* (Reeve), Bay of Yedo. Lischke, Mal. Blätt. xiv. p. 172.

Crepidula deshayesii, sp. n., Folin, Méléagrinicoles, p. 28, pl. 4. figs. 9–10, on pearl-oysters from Panama.

Capulidæ.

Capulus violaceus, sp. n., Angas, Proc. Zool. Soc. 1867, p. 114, pl. 13. fig. 23, Port Jackson.—*Capulus liberatus*, sp. n., Pease, Am. Journ. Conch. iii. p. 284, pl. 24. fig. 2, Paumotu.

Amathina nobilis, sp. n., A. Adams, Proc. Zool. Soc. 1867, p. 312, pl. 19. fig. 27, Cape Notoro, Island of Saghalien.

Hipponyx australis (Lam.), from Hakodate. Schrenck, *l. c.* p. 383.

Naricidæ.

Narica delicata, sp. n., Pease, Am. Journ. Conch. iii. p. 282, pl. 23. fig. 25 Paumotu Islands.

Neritopsis interlirata, sp. n., Pease, *l. c.* pl. 23. fig. 26, Annaa Island, Polynesia.

SCUTIBRANCHIATA.

Podophthalma.

Neritidæ.

Nerita polita (L.), Gulf of Tartary, 10–14 fathoms, one specimen. Schrenck, *l. c.* p. 380.

Neritina mörchiana (Dunker), Reis. Novar. Moll. pl. 2. fig. 24, Madras.

Neritina peguensis, sp. n., Blanford, Journ. As. Soc. ii. p. 68, pl. 1. figs. 1–16. The type occurred close to the beach in a small stream which descends from the hills close to Cape Negrais; specimens were abundant in a brackish pool at the beach, spinous and spineless ones mixed together; a spineless variety in the salt-water of the Bassein river. *N. depressa* (Bens.) figured, ibid. figs. 17–19, *crepidularia* (Lam.), figs. 20–22, found upon Nipa palms; *N. cornucopiæ* (Bens.) = *melanostoma* (Troschel), locally abundant in the delta of the Irawady, slightly differing from the Calcutta type. "*N. cornucopiæ* and *N. depressa*, inhabiting the Ganges delta, are scarcely distinguishable from each other by any more important character than the colour of the aperture; the same shells in Pegu have varied so much that each differs from the other at least as much as it does from their congener *N. crepidularia*. In other places the race representing *N. cornucopiæ* may be perfectly undistinguishable from *N. crepidularia*, as appears to have been observed by Von Martens in Singapore." [The Recorder has found specimens with red and others with blackish apertures in the same rivulet, and, not seeing any other difference between them, he came to the conclusion that this difference of colour is not sufficient for specific distinction. Whether there are any other differences he is at present not prepared to state.]

Neritina mauritiana, sp. n., Morelet, Journ. Conch. xv. p. 440, Mauritius.

Neritina dispar, *rudis*, *rubida*, and *maculata*, spp. nn., Pease, Am. Journ. Conch. iii. pp. 285, 286, pl. 24. figs. 3–6, Roratonga, Ponape, and Tahiti.

Neritina reclivata (Say) including *floridana* (Shuttl.), *californica* (Reeve), *cassiculum* (Sow.), *picta* (Sow.), *showalteri* (Lea), and *jayana* (Récluz), are briefly described and figured by Binney, Land- and Freshwater Shells of N. Am. iii. pp. 103–107; radula of the first, p. 104. The name *Neritella* used by Binney in this paper has been cancelled by himself, as it cannot have priority, not being accompanied by a description. Journ. Conch. xv. p. 432.

Navicella. Dr. Gray proposes to divide this most natural genus into three tribes (subfamilies) and four genera (*Catillus*, *Paria*, *Stenopoma*, and *Orthopoma*), on account of differences observed in the shape of the [rudimentary] operculum. The opercle of each genus is figured in a woodcut: 14 species of *Catillus*, 2 of *Paria*, and 1 of *Stenopoma* are enumerated. The species belonging to *Orthopoma* are not yet pointed out. Proc. Zool. Soc. 1867, pp. 993–1000.

Trochidæ.

Phasianella capensis (Dunker) and *Ph. elongata* (Krauss) are said to have been found at Hakodate. Schrenck, *l. c.* p. 366. [Rather improbable.]

Eutropia (*Tricolia*) *rosea* and *virgo*, spp. nn., Angas, Proc. Zool. Soc. pp. 114, 115, pl. 13. figs. 24 & 25, Port Jackson.

Alcyna rubra (Pease, Proc. Zool. Soc. 1860) = *Collonia variabilis* (Pease, ibid.), Am. Journ. Conch. iii. p. 234.

Turbo sangarensis = *T. pumilio*, Schrenck, pp. 363–365, pl. 16. figs. 6–11.

Turbo gaillardi, sp. n., Folin, Méléagrinicoles, p. 52, pl. 5. figs. 9 & 10, on pearl-oysters from Panama.

Leptonyx bacula, sp. n., Carpenter, Proc. Cal. Ac. Nat. Sc. iii. 1866, p. 177, California.

Liotia semiclathratula, Schrenck, *l. c.* p. 370, pl. 16. figs. 16–25, Straits of Sangar, near Yesso.

Homalogyra (Jeffr.) = *Ammonicerina* (Costa). Without tentacles; eyes sessile, placed behind the head: "a legitimate diminutive descendant of the ancient genus *Euomphalus*." Two British species: *atomus* (Phil. as *Truncatella*) = *nitidissima* (Forb. & Hanley as *Skenea*), and *rota* (Forb. & Hanl., also as *Skenea*). Jeffreys, Brit. Conch. iv. p. 67, 73. [Jeffreys places this genus with *Skenea* in a family, *Skeneidæ*; but the position of the eyes resembles that in *Jeffreysia*, and the shell that of *Cyclostrema*.]

[*Rotella*] *Globulus costatus* (Val.) and *Gl. giganteus* (Less.) = *Rotella aucta* (Sow.), from Hakodate, Schrenck, *l. c.* pp. 367–369. The same two species are indicated from the Bay of Yedo by Lischke, Mal. Blätt. xiv. p. 172.—*Rotella gigantea* at Yokohama, in shops. Martens, Preuss. Exp. i. p. 140.

Ethalia supravallata, sp. n., and var. *invallata*, Carpenter, Proc. Calif. Acad. Nat. Sc. 1866, p. 215, San Diego, Calif.

Leucorhynchia, g. n., Crosse, Journ. Conch. xv. p. 319. Testa perforata, polita, anfractus pauci; apertura rotundata, haud margaritacea; margo basalis una cum columellari rostrum validum callosum supra perforationem emittens. Operculum rotundatum, corneum, multispirum, nucleo centrali. One species, *L. caledonica*, sp. n., Crosse, pl. 11. fig. 4, New Caledonia.

Trochus niloticus (L.) and *T. maximus* (Koch) = *marmoratus* of Kiener, not Chemnitz, = *niloticus* of Reeve fig. 3, are compared, and an account of their development and synonymy given, by Martens, Ann. & Mag. N. H. Aug. 1867, p. 97.

Trochus exilis, *conoidalis*, and *marmoreus*, spp. nn., Pease, Am. Journ. Conch. iii. pp. 286, 287, pl. 24. figs. 7, 8, 9, Paumotus.

Trochus argyrostomus (Gmel.) is found at Hakodate and in the Korea in two forms, a more elevated and a more depressed.—*Tr. rusticus* (Gmel.) Hakodate and Korea.—*Tr. nordmanii* (Schrenck), pl. 15. figs. 1, 2, Hakodate.—*Tr. subfuscescens* (Schrenck), pl. 15. figs. 3–10, Hakodate.—*Tr. zonatus* (Wood) and *cicer* (Menke), found at Hakodate [?].—*Tr. jessoensis* (Schrenck), pl. 15. figs. 11–18; *iridescens* (Schrenck), pl. 15. figs. 19–24; *globularius* (Schrenck), pl. 16. figs. 1–4; *adamsianus* (Schrenck), pl. 16. fig. 5; *labio* (L.), and *neritoides* (Phil.): all from Hakodate. Schrenck, *l. c.* pp. 345–362.—*Tr. labio*, *argyrostomus*, and *carpenteri* (Dunker), Bay of Yedo. Lischke, Mal. Blätt. xiv. p. 172.—*Tr. rusticus*, Yokohama. Martens, Preuss. Expd. i. p. 138.

Euchelus angulatus, sp. n., Pease, Am. Journ. Conch. iii. p. 283, pl. 23. fig. 27, Annaa Island.

Calliostoma supragranosum, sp. n., Carpenter, Proc. Calif. Acad. Nat. Sc.

1866, p. 214, San Diego, Calif. The name *C. formosum*, given by the same author, Proc. Calif. Acad. 1864, is changed into *C. gemmulatum*, the name *formosum* being preoccupied, p. 215.

Gibbula coxi, sp. n., Angas, Proc. Zool. Soc. p. 115, pl. 13. fig. 26, Port Jackson.—*G. optabilis*, sp. n., Carpenter, Proc. Calif. Acad. Nat. Sc. 1866, p. 214, San Pedro, California.

Crossea concinna, sp. n., Angas, Proc. Zool. Soc. p. 911, pl. 44. fig. 14, Port Jackson.

Margarita. Eye-like bodies at the base of the lateral filaments, indicated by Agassiz in 1849, are more exactly described and figured by R. Bergh in his monograph of *Phidiana*, Nat. Foren. Vid. Meddel. 1867, p. 109, pl. 4 *a*. figs. 9–15; they contain pigment-cells similar to those of the eye of the same animal, and may safely be named accessory eyes. Some details about the eye are added, p. 110, footnote, figs. 16, 17 (also in Ann. & Mag. Nat. Hist. ser. 4. ii. pl. 1. figs. 11–19). The species in which those bodies have been observed are *M. grönlandica* (Chemn.) and *cinerea* (Couth.), var. *grandis*=*M. striata* (Brod. & Sow.).

Margarita arctica (Leach), in Bay de Castries, Mantchouria, Schrenck, *l. c.* p. 342.

Margarita campanulata, sp. n., Packard, Mem. Bost. Soc. Nat. Hist. i. p. 284, pl. 7. fig. 15, Labrador.

Vitrinella ponceliana, sp. n., Folin, Méléagrinicoles, p. 51, pl. 5. fig. 7, on pearl-oysters from Panama.

Gena lævis, sp. n., Pease, Am. Journ. Conch. iii. p. 283, pl. 23. figs. 28, 29, Tahiti; *G. rosacea*, sp. n., Pease, ibid. p. 284, pl. 24. fig. 1, Paumotus.

Scissurella munieri (Fischer), figured, Journ. Conch. xv. pl. 9. fig. 4.

Schismope ferriezi, sp. n., Crosse, Journ. Conch. xv. p. 318, pl. 11. fig. 7, New Caledonia.

Haliotis gigantea (Chemn.), including *H. tubifera* (Lam.), *kamtschatkana* (Jonas), *discus* (Reeve), and *aquatilis* (Reeve), the breadth of the shell, colour, and number of the openings being variable. Schrenck, *l. c.* pp. 384–387. The same species, with the same synonyms, and *H. gruneri* (Phil.) are mentioned among the shells from the Bay of Yedo, by Lischke, Mal. Blätt. xv. p. 173. *Haliotis gigantea*, common at Yokohama: Martens, Preuss. Exped. i. p. 139.

Edriophthalma.

Fissurellidæ.

Fissurella macroschisma (Chemn.). Specimens from Hakodate described by Schrenck, *l. c.* p. 308–310; it is, perhaps, the same as *Macrochisma sinensis*, sp. n., A. Adams, Proc. Zool. Soc. 1867, p. 312, pl. 19. fig. 28 (living animal), Tabu-sima, Japan.

Puncturella cooperi, sp. n., Carpenter, Proc. Calif. Acad. Nat. Sc. 1866, p. 214, Catalina Island, California.

Semperia, g. n., Crosse, Journ. Conch. xv. p. 74. Shell with a slit in the foremost part, marginal in young specimens as in *Emarginula*, somewhat distant from the anterior margin in adult ones, but much nearer to it than in *Rimula*, and presenting a longitudinal internal groove, continued from the slit to the anterior edge, as in *Subemarginula* and *Clypidina*. *S. paivana*, sp. n., *l. c.* p. 76, pl. 2. fig. 2, Madeira. *Emarginula emendata* (Sow.) and the fossil tertiary *Rimula elegans* (Desh.) appear to belong to this genus.

[*Tectura*] *Patella* (*Acmæa*) *testudinalis* (Müll.), *patina* (Eschscholtz), *digitalis* (Eschscholtz), *granostriata* (Reeve), all from Hakodate, are described, and the last figured, by Schrenck, *l. c.* pp. 291–300, pl. 14. figs. 1–3.

Acmæa (*pileolus*, var.?) *rosacea*, sp. n., Carpenter, Proc. Calif. Acad. Nat. Sc. 1866, p. 213, San Diego and Monterey, California.

Scurria? *funiculata*, sp. n., Carpenter, *l. c.* p. 214, Monterey.

Tecturidæ.

Tectura fluviatilis, sp. n., Blanford, Journ. As. Soc. ii. p. 62, pl. 2. figs. 2–4, Delta of the Irawady, brackish water, on rocks, rarely on trunks of trees.

[*Lepeta*] *Patella* (*Cryptobranchia*) *cæca* (Müll.). Specimens from the Bay de Castries described by Schrenck, *l. c.* pp. 291–294.

Gadiniidæ.

Gadinia conica, sp. n., Angas, Proc. Zool. Soc. 1867, p. 115, pl. 13. fig. 27, Port Jackson.

Patellidæ.

Patella vulgata. E. Ray Lankester has published notes on its anatomy, especially the circulatory system. Ann. & Mag. Nat. Hist. xx. pp. 334–337.

Patella lamanonii, sp. n., Schrenck, *l. c.* p. 303, pl. 14. figs. 6–9; *P. amussitata* (Reeve), ibid., pl. 14. figs. 4, 5; *P. argentata* (Gray), *exarata* (Nuttall), and *saccharina* (L.) described, ibid. pp. 300–306: all from Hakodate.

Patella amussitata (Reeve) and *P. pentagona* (Born), Bay of Yedo. Lischke, Mal. Blätt. xiv. p. 173.

Patella insignis and *P. frauenfeldi* (Dunker), Reis. Novar. Moll. pl. 2. figs. 25 and 26 [see note in Zool. Record, iii. p. 188].

Nacella (*palleacea* var.?) *triangularis* and *N. subspiralis*, spp. nn., Carpenter, Proc. Calif. Acad. Nat. Sc. 1866, p. 213, Monterey and Catalina Island, Calif.

Chitonidæ.

Chiton middendorffii, *albrechtii*, *lindholmii*, spp. nn., Schrenck, Amurland, pp. 278, 283, and 288, pl. 12. figs. 1–8, pl. 13. figs. 7–17, and pl. 12. figs. 9–16, the first from the Bay de Castries, the two others from Hakodate.—*Ch. coreanicus* (Reeve), fig. ibid. pl. 13. figs. 1–6; *Ch. stelleri* (Middendorff) = *amiculatus* of Sowerby, = *sitkensis* and *chlamys* of Reeve; further *Ch. zelandicus* (Q. & G.), *spiniger* (Sow.), and *submarmoreus* (Middendorff) described in detail, pp. 271–278: all from the Northern Japanese seas.

Lophyrus smaragdinus, sp. n., Angas, Proc. Zool. Soc. 1867, p. 115, pl. 13. fig. 28, Port Jackson.

Lepidopleurus pectinatus and *scabricostatus*, spp. nn., Carpenter, Proc. Calif. Acad. Nat. Sc. 1866, pp. 211, 212, Catalina Island, California.

Ischnochiton veredentiens, sp. n., Carpenter, *l. c.* p. 211, from the same locality.

Trachydermon, new subgenus. Squamis pallii minimis, confertis. *Tr. gothicus*, sp. n., from the same locality. Carpenter, *l. c.* p. 212.

Leptochiton nexus, sp. n., Carpenter, *l. c.* p. 212, Catalina Island, California.

Tanicia carpenteri, sp. n., Angas, Proc. Zool. Soc. 1867, p. 116, fig. 30, Port Jackson.

Onithochiton rugulosus, sp. n., Angas, *l. c.* p. 115, pl. 13. fig. 29, Port Jackson.

Acanthochites avicula, sp. n., Carpenter, Proc. Calif. Acad. Nat. Sc. 1866, p. 211, Catalina Island, Calif.

Acanthopleura fluxa, sp. n., Carpenter, *l. c.*, Santa Barbara Island, Calif.

Tectibranchiata.

Jeffreys, Brit. Conch. iv. p. 409, says that the name *Pomatobranchia* was published by Lovén in the same year as that of *Pleurobranchiata* by Gray. This is an error. The name *Pomatobranchia* was introduced by Schweigger as early as 1820, and is merely a philological correction of Cuvier's name *Tectibranches*, which dates from 1817, and comprises as chief types *Pleurobranchus*, *Aplysia*, and *Bulla*.

Tornatellidæ.

Actæon tornatilis (L.) with three varieties—*subulatus* (S. Wood), *tenellus* (Lovén), and *bullæformis*. Jeffreys, Brit. Conch. iv. pp. 433–436.

Leucotina esther, sp. n., Angas, Proc. Zool. Soc. 1867, p. 116, pl. 13. fig. 31, Port Jackson.

Aplustridæ.

Aplustrum physis (L.), Nangasaki. Lischke, Mal. Blätt. xiv. p. 173.

Cylichnidæ.

Cylichna. The British species are, according to Jeffreys:—1. *acuminata* (Brug.); 2. *nitidula* (Lovén); 3. *umbilicata* (Mont.), with *conulus* (S. Wood) as a variety; 4. *cylindracea* (Penn.); 5. *alba* (Brown). Brit. Conch. iv. pp. 410–418.

Utriculus (Brown) is regarded as a distinct genus by Jeffreys, differing from *Cylichna* by the tentacles being separate, the eyes distinct, the gizzard horny, and the shell having a visible spire with a mamillary apex; *Amphisphyra* (Lovén) is identical with it. British species:—*mammillatus* (Phil.), *truncatulus* (Brug.)=*Bulla truncata* (Adams), *obtusus* (Mont.), *ventrosus* (Jeffr.)=*Amph. globosa* of Jeffreys, Ann. & Mag. Nat. Hist. 2nd ser. i., not of Lovén; *expansus* (Jeffr.), and *hyalinus* (Turt.). Brit. Conch. iv. pp. 419–428.

Bullidæ.

[*Haminea*] *Bulla constricta* (Ad.), from Hokodate. Schrenck, *l. c.* p. 462.

Scaphander lignarius (L.) feeds on other mollusks, as *Corbula*, *Dentalium*, *Odostomia*, &c. Jeffreys, Brit. Conch. iv. p. 444.

[*Atys*] *Bulla utriculus* (Brocchi)=*cranchii* (Leach). Jeffreys, Brit. Conch. iv. p. 440.

Atys debilis (Pease) is not=*succisa* (Ehrenb.). Pease, Am. Journ. Conch. iii. p. 231.

Philinidæ.

Philine. The British species are arranged by Jeffreys thus (Brit. Conch. iv. pp. 446–460):—A. Having a chain-like or punctate sculpture; spire conspicuous: 1. *scabra* (Müll., not Chemnitz)=*granulosa* (Sars)=*dilatata* (S. Wood) and partly=*angustata* (Phil.); 2. *catena* (Mont.); 3. *angulata*, sp. n., p. 451, Hebrides, Shetland, Aberdeenshire; 4. *quadrata* (S. Wood)=*scutulum* (Lovén)=*formosa* (Stimps.); 5. *punctata* (Clark). B. Sculpture latticed, spire conspicuous: 6. *pruinosa* (Clark). C. Smooth, spire conspicuous: 7. *nitida*, sp. n., p. 456, Skye and Unst. D. Smooth, spine indistinct: 8. *aperta* (L.).

Chelidonura adamsii, sp. n., Angas, Proc. Zool. Soc. 1867, p. 116, pl. 13. fig. 32, Port Jackson.

Pleurobranchidæ.

[*Umbrella*] *Operculatum aurantium*, sp. n., Pease, Am. Journ. Conch. iii. p. 287, Sandwich Islands.

NUDIBRANCHIATA.

Thirty species of Nudibranchiates, inclusive of *Pallibranchiata*, inhabiting the western and northern coasts of France, are enumerated by P. Fischer, Journ. Conch. xv. pp. 1–12.

Doridida.

Doris derelicta, Fischer= *D. verrucosa* of Philippi and Verany, not Cuvier, described by P. Fischer, Journ. Conch. xv. p. 7, Gironde and Mediterranean.

Tritoniidæ.

Caliphylla, g. n., Costa. Corpus elongatum, angustum. Tentacula duo foliacea longitudinaliter convoluta. Caput limbo labiali ampliato bilobo. Branchiæ foliaceæ, vasculares, numerosæ, per totius trunci utrumque latus in varias series longitudinales irregulares digestæ. Anus in latere dextro post orificia genitalia. Allied to the genus *Physopneumon* of the same author (Annuario Mus. Zool. Napoli, ii.). *C. mediterranea*, sp. n., Gulf of Naples. Rendiconto Accad. Sc. Fis. e Nat. Napoli, vi. p. 137.

Nemocephala, g. n., Costa. Corpus tritoniæforme. Caput margine antico semicirculari sex-digitato sive in appendices sex simplices cylindricas tentaculiformes diviso. Tentacula ramosa, in vaginam tubulosam retractilia. Branchiæ arborescentes in dorsi utroque latere unica serie longitudinali dispositæ. Allied to *Dendronotus*, but having six simple, not branched, filaments in front. *N. marmorata*, sp. n., Gulf of Naples. Costa, *l. c.* p. 137.

Æolidiæ.

This family was made the subject of very exact and extensive anatomical researches by Rud. Bergh in the years 1854–62. They are now collected in one work treating of the outer forms as well as the anatomical structure of these animals. Peculiar optic ganglia are absent in this family; the salivary glands are distinct and well developed, although their presence was denied by former authors. Urticating organs in the papillary appendages are characteristic of one part of the family; in all species provided with them, threads differing in form according to the species are to be found throughout the intestinal tract, and are, without doubt, swallowed with the food. The supposition of Huxley and Gosse, supported by Strethill Wright (Quart. Journ. of Microsc. Soc. 1862), viz. that the urticating organs observed in this family are not produced by the living animals themselves, but derived from the Cœlenterata which they had devoured, is contradicted by R. Bergh in his monograph of *Phidiana*, p. 114. In some genera and subfamilies they are absent altogether, as in *Embletonia*, *Fiona*, *Phyllodesmium*, in

the *Hermæina* and *Proctonotina*; *Glaucus* feeds only on *Velella* and *Porpita*, but its urticating organs are quite distinct from those of these two genera; and, further, they are found very often in distinct small cysts within the *Æolididæ*, these cysts being without doubt their matrix. All *Æolididæ* are hermaphrodites, the ovary and testicle being united into one hermaphroditic gland; nevertheless there is a true copulation: there is a distinct penis capable of erection, and two channels, one for its reception, the other for the evacuation of the eggs. The numerous eggs are arranged in rows which are coiled up in different manners, and form masses of different shape (Dansk. Vid. Selsk. Skrift. vii. 1867).

The classification proposed by the author is the following:—

ÆOLIDIDÆ = *Phyllobranchia*, Latreille, 1825.

I. ÆOLIDIÆ NOTOPROCTÆ. Vent dorsal. No urticating organs. Blind sac of the stomach situated beneath the hermaphroditic gland. Biliferous vessel glandular and much branched.

a. Teeth of the radula in several rows. *Proctonotus* (A. & H.) = *Zephyrina* (Quatref.) = *Venilia* (A. & H.), and *Janus* (Verany) = *Antiopa* (A. & H.).

b. Teeth of the radula in one row. *Hermæa* (Lovén), *Stiliger* (Ehrenb.) = *Calliopæa* (Orb.); *Alderia* (Allman) = *Stiliger* (Lovén) and *Fiona* (H. E.).

II. ÆOLIDIÆ PLEUROPROCTÆ. Vent lateral. Urticating organs. Biliferous vessels scarcely glandular, and slightly branched.

1. Blind sac of the stomach situated beneath the hermaphroditic gland. Teeth of the radula in one row. *Glaucus*.

2. Blind sac of the stomach situated above the hermaphroditic gland.

a. Teeth of the radula in one row. *Calma* (A. & H.), *Favorinus* (Gray), *Facelina* (A. & H.), *Phidiana* (Gray), *Spurilla* (Bergh), *Æolidia* (Cuv.), *Phyllodesmium* (Ehrenb.), *Cuthona* (A. & H.), *Cratena* (Bergh) = *Montagua* (auctt.), *Tergipes* (Cuv.), *Embletonia* (A. & H.).

b. Teeth of the radula in three rows. *Coryphella* (Gray), *Flabellina* (Cuv.), *Galvina* (A. & H.).

Æolidia (Cuv.) = *Æolidiana* (Quatref.) = *Cavolina* (Brug., Orb.) comprises the species *papillosa* (L.) = *bodoënsis* (Gunner), *sömmeringii* (Leuck.), *glauca* (A. & H.), and *alderi* (Cocks). Anatomical details of the first two species are given. Generic characters: rhinophores [upper tentacles] simple; the papillæ compressed; the anterior angles of the foot almost rounded; the middle projecting piece of the jaw not denticulated. Bergh, *l. c.* pp. 62–66, pl. 1.

Eolis andreapolis and *E. robertianæ* are two new British species described by McIntosh, Proc. Roy. Soc. Edinburgh, 1864–65, pp. 392, 393. They were found at St. Andrew's together with some other Nudibranchiate Mollusca. Observations on the spawning of these mollusks are added.

Æolidella, g. n., R. Bergh, Phidiana, p. 3. Form of the body, tentacles, and papillæ like those of *Æolis*; masticatory edge of the jaw minutely plaited, teeth of the radula in one row, comb-like, notched in the middle. To this new genus belong 4 species; three of them are described by others as *Æolis*, viz. *Æ. sömmeringii* (Leuck.), *glauca* (A. & H.), *alderi* (Cocks), one being new, *occidentalis*.

Spurilla, g. n., Bergh. Rhinophores perfoliate. Anterior angles of the foot almost rounded. Middle part of the jaw only finely denticulated. One species, *Sp. neapolitana* (Chiaje and Verany as *Æolidia*), Mediterranean, Bergh, Æolidierne, p. 67, pl. 5.

Facelina (A. & H.), nearly identical with Gray's *Phidiana*. Rhinophores perfoliate. Anterior angles of the foot assuming the form of tentacles. Middle part of the jaw strongly denticulated. To this genus belong *Æ. coronata* (Forb.), *Æ. drummondi* (A. & H.), anatomical details of which are given, probably also *Æ. elegans* (A. & H.) and *punctata* (A. & H.), Bergh, *l. c.* pp. 71–75, pl. 2.

Phidiana (Gray). A careful monograph with a description of the anatomy is given by R. Bergh. To the generic characters is to be added, that the edge of the jaw has a single row of denticles, and the radula has but few teeth, arranged in one longitudinal row only. Penis pointed, similar to that of *Glaucus*, *Alderia*, and *Limapontia*. Four species are described:—*inca* (Orb.), pl. 3 *a*, Peru; *lynceus*, sp. n., Bergh, pls. 3 *b* & 4 *a*, St. Thomas, West Indies; *patagonica* (Orb.); and *unilineata* (A. & H.). In *Ph. lynceus* there is a pair of accessory eyes close to the eyes proper. Nat. Foren. Vid. Meddel. 1867, pp. 97–116.

Cratena, nom. nov., Bergh = *Cavolina* of Bruguière partly, Alder & Hancock = *Montagua* of Gray. Rhinophores simple. Anterior angles of the foot rounded. Middle part of the jaw minutely denticulated. Teeth of the radula. *C. hirsuta* (Bergh) and *C. olrikki* (Mörch), both from Greenland. Bergh, Æolidierne, pp. 75–80, pl. 1.

Galvina (A. & H.). Rhinophores simple. Papillæ swollen. Anterior angles of the foot rounded. Middle part of the jaw strongly denticulated. Lateral teeth of the radula not denticulated. *G. rupium* (Möller as *Tergipes*); it is anatomically examined by Bergh, *l. c.* pp. 81–88, pl. 3. To the same genus appear to belong *Æ. exigua* (A. & H.) = *lacinulata* (Lovén), *Æ. amethystina*, *tricolor*, *picta*, *farrani*, *vittata*, and *cingulata* (A. & H.), *fustifera* (Lovén), and perhaps *adspersa* (Nordmann), whilst to the restricted genus *Tergipes* appear to belong *despectus* (Johnst.), *claviger* (Menke), *bullifer* (Lovén), *edwardsii* (Nordm.), *lamarckii* (Dh.), and *tilesii* (Blv.). Bergh, *l. c.* p. 82.

Coryphella (Gray). Rhinophores simple. Angles of the foot produced. Middle part of the jaw denticulated. Lateral teeth of the radula minutely denticulated. To this genus belong *Æ. salmonacea* (Couth.) = *bodoënsis* (Möller) = *papilligera* (Beck), *scacchiana* (Phil.), and *bostoniensis* (Couth.). All three anatomically examined by Bergh, *l. c.* pp. 88–105, pls. 2, 4, & 5.

Glaucus (Forster). Bergh gives an excellent monograph of this genus (chiefly from collections and observations made by Reinhardt), which he divides into two subgenera with the following species:—

1. Subgen. *Glaucus*. Size larger; head small; body slender, with long tail; arms rather short, with the papillæ in one row; penis provided with a horny hook. *Gl. atlanticus* (Forst.) = *hexapterygius* partly, and *octopterygius* (Cuv.) = *boscii* (Lesson) = *forsteri* (Lam., Quoy & Gaimard) = *radiatus* (Orb. Voy. Can.), pls. 6 & 7, Atlantic and Mediterranean; *Gl. gracilis*, sp. n., Bergh, *l. c.* p. 147, Atlantic; *Gl. lineatus* (Reinhardt), Southern Pacific; *Gl. longicirrus* (Reinhardt) = *pacificus* (Esch.), Northern Pacific; *Gl. eucharis* (Less.), Sea of Mossambique.

2. Subgen. *Glaucilla*. Size smaller; head strong; body bulky, with short tail; arms more prominent, with the papillæ in several rows; penis without hook; no large urticating threads. *Gl. marginalis* (Reinhardt), Northern Pacific; *Gl. briareus* (Reinh.)=? *draco* (Eschscholtz?, Lesson)=? *distichoicus* (Orb.), Southern Pacific; both figured, pl. 9. Quite uncertain is *Gl. tetrapterygius* (Rang). Bergh, *l. c.* pp. 105–164.

PULMONATA INOPERCULATA.

Geophila.

Dr. Pfeiffer reviews, in a rather extensive paper (Mal. Blätter, xiv. pp. 1–10, 80–92, & 227–237), the recent systematic arrangements of this family, and more especially that adopted in the second edition of Albers's Heliceen, edited by the Recorder (1860). He points out some omissions and shortcomings, alludes to some recent improvements and discoveries, and comes to the conclusion that only an artificial system, and not one based on natural affinities, enables the student to determine specimens with accuracy.

O. A. L. Mörch recapitulates at some length the modern classifications of the *Helicidæ*. The paper, being chiefly historical, does not allow of being condensed. The author's views are in favour of the systematic value of jaw and radula, which had been doubted by H. Crosse. Some new observations are added and will be noticed hereafter. Journ. Conch. xv. pp. 232–258.

Ed. Morse, who some years ago went so far as to distinguish several tribes and numerous genera within the genus *Helix* as defined by Lamarck and Pfeiffer, returns now, in a popular treatise, to the system of these authors, regarding even the *Hyalinæ* and *Gastrodontes* simply as species of *Helix*, and distinguishing three groups only:—1, that with strong ribbed jaw and short serrated teeth of the radula [true *Helix*]; 2, that corresponding to *Hyalina* or *Zonites* of recent authors; 3, that corresponding to *Patula*. Am. Naturalist, i. pp. 313 & 341.

Radula of the Pulmonata. Heynemann states that the form of the tip of the teeth, which is not well understood if seen only from above, can be better seen in lateral views, and remarks that these tips are not coloured by a solution of carmine, like the rest of the tooth, and that they are rendered nearly invisible when kept in Canada balsam. Mal. Blätt. xiv. p. 193.

Viviparous are *Helix inæqualis* (Pfr.), Ed. Marie, Journ. Conch. xv. p. 293; *Achatinella bulimoides* (Swains.), Heynemann, Mal. Blätt. xv. p. 150; and *Balea perversa* (L.), Hartman, Œfvers. K. Vetensk. Akad. Förhandl. 1866, p. 387.

Several observations on the hibernation and copulation of some Belgian land-snails are given by J. Colbeau, Annal. Soc. Malacol. Belg. ii. pp. 29–37

Helix fidelis (Gray). Eggs and young animals described by J. H. Thomson, Am. Journ. Conch. iii. p. 104.

Vaginulidæ.

Vaginulus siamensis, sp. n., Martens, Preuss. Exped. Zool. ii. p. 68, pl. 5. fig. 3, Petshaburi, Siam; *V. hasselti*, sp. n., id. ibid. p. 176, figs. 2 & 4, Sumatra, Borneo, and Amboina; *V. taunaysii* (Fér.), Rio Janeiro, ibid. p. 6.

Veronicella floridana (Binney), figured Am. Journ. Conch. iii. pl. 16. figs. 2–5.

Agnatha.

According to the observations of Guppy and Mörch, the genera *Streptaxis* and *Ennea* are to be transferred to this subdivision. Journ. Conch. xv. pp. 256, 257. *Streptostele* and *Gibbulina* must follow.

Daudebardia letourneuxi, sp. n., Bourguignat, Moll. Nouv. fasc. vii. 1866, p. 210, pl. 33. figs. 7–12, Bone, Algeria. The author announces that he intends to publish a new genus, *Moussonia*, for the Syrian species of *Daudebardia*, viz. *D. saulcyi* and *D. gaillardoti*. [The name *Moussonia* is preoccupied for a genus of *Diplommatinacea*, *Pupa problematica* of Mousson, by O. Semper.]

Guppya. A new genus proposed incidentally by O. A. Mörch for *Conulus vacans* (Guppy), described in Ann. & Mag. Nat. Hist. 1866, xvii. p. 53, the teeth of the radula resembling those of *Testacella*. Journ. Conch. xv. p. 256.

[*Glandina*] *Oleacina cyanozonaria* (Gundlach), *oleacea* (Fér.) var. = *straminea* (Desh.), *translucida* (Gundlach), *gundlachi* (Pfr.), *trinitaria* (Gundlach), *berendti* (Pfr.), *paivana* (Pfr.), *poeyana* (Pfr.) are figured by Pfeiffer, Novitat. Conch. pl. 77.—*Oleacina incisa*, sp. n., Pfr. Mal. Blätt. xiv. p. 198, Novitat. Conch. pl. 82. figs. 13–15, Cuba.

Spiraxis moreletiana (Pfr.), Novitat. Conch. pl. 82. fig. 10–12.

Streptaxis dunkeri (Pfr.). No jaw has been found; a living specimen is figured by Martens, Preuss. Exped. Zool. ii. p. 7, pl. 19. fig. 3.—*Str. crossei*, sp. n., Pfr. Journ. Conch. xv. p. 1, pl. 1. fig. 1, Rio Janeiro.—*Str. paivana* [*-us*], sp. n., Pfr. ibid. fig. 2, Macahe, Brazil.—*Str. deshayesianus* and *decipiens* (Crosse), Journ. Conch. xv. pp. 202, 203, pl. 5. figs. 3 & 4, localities uncertain.—*Str. mouhoti* (Pfr.) = *johnsuichi* (Martens), Siam. Martens, Preuss. Exped. Zool. ii. p. 84, pl. 22. fig. 22.—*Str. pfeifferi*, sp. n., Zelebor, Verhandl. zool.-bot. Gesellsch. Wien, xvii. p. 806, Nicobar Islands.

Pupa, new subgenus *Pagodella*. *P. (P.) ventricosa*, sp. n., H. Adams, Proc. Zool. Soc. 1867, p. 304, pl. 19. fig. 6, Mauritius.

Pupa (*Gibbulina*) *nevilli*, sp. n., H. Adams, *l. c.* fig. 2, Mauritius.

Pupa brevis, *caldwelli*, and *modiolinus* [!], spp. nn., Morelet, Journ. Conch. xv. p. 439. [Probably also *Gibbulinæ*.]

Gibbus (*Gonidomus*) *newtoni*, sp. n., H. Adams, *l. c.* p. 305, fig. 8, Mauritius.

Pupa, new subgenus *Anöstomella*. Shell abbreviated, ovate, ribbed, brown-coloured, small; aperture ascending nearly to the upper limit of the penultimate whorl, without teeth. *P. ascendens*, Martens, *l. c.* p. 386, pl. 22. fig. 23, Amboina. [Perhaps a *Diplommatina*.]

Ennea (*Gulella*) *modesta*, sp. n., H. Adams, *l. c.* p. 305, fig. 9, Mauritius.

Pupa (*Ennea*) *bicolor* (Hutt.) is also found in Madura, Timor, and Amboina. There is a white spot on the shell at the beginning of the last whorl, which is probably thickened inside; it has been observed in specimens from very different localities. Martens, *l. c.* p. 384.

Streptostele fastigiata and *folini* (Morelet, see Zool. Record, iii. p. 200), Pfr. Novitat. Conch. pl. 76. figs. 6, 7 & 8, 9.

Cœliaxis. The characters are emendated thus:—Testa umbilicata, turrita, oblique costulata; spira plerumque decollata; apertura plica parietali vel tuberculo munita; peristoma continuum, simplex, rectum. Allied to *Gibbulina* and *Ennea*. *C. layardi*, Cape of Good Hope (see Proc. Zool. Soc. 1865, p. 54); *C. exigua*, sp. n., Solomon archipelago. H. Adams and Angas, Proc. Zool. Soc. 1867, p. 907, pl. 43. figs. 16, 17.

Cylindrella is represented in the United States by nine species, but restricted to Florida, Texas, Mexico, and California. They are:—*poeyana* (Pfr.), *jejuna* (Gould), *coahuilensis* (Binney), belonging to the subgenus *Gongylostoma*; *römeri* (Pfr.), *goldfussi* (Menke), *remondi* (Gabb), *pfeifferi* (Menke), *irregularis* (Gabb), and *newcombiana* (Gabb), belonging to *Holospira*: all are figured. Tryon, Am. Journ. Conch. iii. pl. 21. figs. 27–33.

Cylindrella (*Urocoptis*) *newcombiana* and *irregularis*, spp. nn., Gabb, Am. Journ. Conch. iii. pp. 237, 238, pl. 16. figs. 6 & 7, Lower California. The latter is stated to resemble closely the *Subulina* (*Cœliaxis*) *layardi* of Adams and Angas, from South Africa.

Cylindrella crosseana, gassiesi, and *tryoni*, spp. nn., Pfeiffer, Journ. Conch. xv. pp. 437, 438, Mexico.—*C. macra* (Wright) described by Pfeiffer, Mal. Blätt. xiv. p. 210.

Cylindrella swiftiana (Crosse) described and figured. Journ. Conch. xv. p. 200, pl. 5. fig. 5, locality not known.

Oxygnatha (Limacea and Vitrinea).

The jaws of most of the genera of slugs being known, the Recorder agrees with Dr. Mörch that they are better distributed according to this character among the shell-bearing snails than kept together in a separate family; therefore *Limax* and *Philomycus* are placed here, and *Arion* with the *Odontognatha*.

Philomycus bilineatus (Bens. as *Incilaria*), Yokohama and Nangasaki, Martens, Preuss. Exped. Zool. ii. p. 16, pl. 5. fig. 1, from a living specimen; also in China and Mantchouria, Schrenck, Moll. Amurl. p. 693, pl. 26. figs. 14–16.—*Ph. striatus* (Hasselt as *Meghimation*), Java, Martens, *l. c.* p. 178.—*Tebennophorus carolinensis* (Bosc) and *dorsalis* (Binney) figured, Am. Journ. Conch. iii. pl. 16. figs. 6–8.

Limax rusticus (Miller) is distinguished from *L. marginatus* (Müll.) and *L. fulvus* (Normand) briefly described by Drouet, Moll. Côte d'Or, p. 29. *L. niger*, sp. n., Malzine, Faun. Malacol. Belg. p. 59, pl. 3. figs. 12, 13, Namur [perhaps only a variety of *L. maximus*].—*L. arenarius*, sp. n., Gassies, Malacol. Aquit. p. 11. fig. 1, sandy grounds of the sea-coast to the left of the Garonne, only 14 millimetres long; jaw and radula, copulation and eggs, are described.—*L. xanthius*, sp. n., Bourguignat, Moll. Nouv. fasc. vii. 1866, p. 204, pl. 32. figs. 11–15, Ems (Nassau).

Limax variegatus (Drap.). Identical with this European species is *Limacus breckworthianus* (Lehmann) = *Limax bicolor* (Selenka), from Sydney (Zool. Record, i. p. 223; ii. p. 270), according to the researches of F. D. Heynemann, who has received the same species also from New Zealand. Mal. Blätt. xiv. pp. 131–133.

Limax agrestis (L.) is found also in Mantchouria. Schrenck, Moll. Amurl. p. 690. The same, as well as *maximus* and *flavus* (L.), is found in the towns of the eastern coast of North America, very probably introduced from Europe. Tryon, Am. Journ. Conch. iii. pp. 314, 315, pl. 17. figs. 2 & 3, pl. 18. figs. 14–16.

Limax campestris (Binney) and *L.* (*Amalia*) *columbianus* (Gould) figured by Tryon, Am. Journ. Conch. iii. pl. 16. figs. 11–13, and pl. 17.

Milax barypus, sp. n., Bourguignat, Moll. Nouv. fasc. vii. 1866, p. 208, pl. 32. figs. 7–10, Nazareth.

Krynickillus constrictus, sp. n., Bourguignat, *l. c.* p. 206, pl. 32. figs. 1–6, Bahr-el-Kelb, Syria.

Oopelta (Mörch) described by Heynemann. Allied to *Limax*; no internal shell; shield granulated, pointed behind, free in front. Keel of the back very faint. Under surface of the foot not longitudinally divided into three parts. Teeth of the radula somewhat different. *O. nigropunctata* (Mörch), Guinea. Allied to it, but differing by having an internal shell, are *Arion ascensionis* (Less.) and *Limax perlucidus* (Q. & G.). Heynemann, Mal. Blätt. xiv. pp. 190–192, pl. 2. figs. 1, 2 (teeth of the radula). [With regard to the last species, see *Hyalimax*, p. 574, among the *Elasmognatha*.]

Aspidoporus (Fitzinger). Dr. Mörch calls the attention of malacologists to this problematic genus of slugs, supposing it to be identical with *Phosphorax* (Webb & Berthelot); *Parmarion flavescens* (Keferstein), see Zool. Record, iii. p. 192, is referred to the same genus, Mörch, Journ. Conch. xv. p. 255.

Parmarion pupillaris (Humbert). The living animal is examined and figured. Hasselt's *Parmacella punctata*, *tæniata*, and *reticulata* belong to the same genus, perhaps the same species, or to *P. luteus* and *P. parma*, sp. n., Mousson collect., of which the shell only is known. Martens, *l. c.* pp. 178–182, pl. 5. figs. 7, 8 (living animal), pl. 12. fig. 4 (shell).

Parmella, g. n., H. Adams. Near *Parmacella* and *Peltella*; shell depressed, spire flat, epidermis horny, polished, extending widely beyond the posterior part of the margin. *P. planata*, sp. n., Feejee Islands. H. Adams, Proc. Zool. Soc. 1867, p. 308, pl. 19. fig. 20.

Vitrina pellucida (Müll.), from Mantchouria, Schrenck, *l. c.* p. 689.—*V. limpida* (Gould), figured by Morse, Am. Naturalist, i. p. 314.—*V. bocagei* (Paiva) figured in Paiva's Monogr. Moll. Mad.

Helicarion (Fér.). To this genus, which is distinguished by the muciferous pore at the extremity of the foot, belong probably several Asiatic species hitherto described as *Vitrina*. Martens, *l. c.* p. 68, teeth of radula fig. p. 174; *H. suturalis*, sp. n., Martens, *l. c.* p. 183, pl. 12. fig. 2 (shell), pl. 3. fig. 9 (living animal), and pp. 173, 174 (jaw and teeth of the radula), Buru; *H. sericeus*, sp. n., *l. c.* p. 185, pl. 12. fig. 1, Timor; and an undetermined small blackish species from Singapore, *l. c.* p. 187, pl. 5. fig. 5. To this genus very probably belong also *H. lineolatus*, sp. n., Martens, *l. c.* p. 184, pl. 12. fig. 4, Sumatra; *Vitrina flammulata* and *viridis* (Q. & G.), *H. albellus*, sp. n., Martens, *l. c.* p. 186, Java; *Vitrina borneensis*, *idæ*, and *celebensis* (Pfr.), *Helix agilis* (Hasselt, MS.), all from the Indian archipelago; and perhaps also *V. præstans* (Gould), from Birma. Martens, *l. c.* pp. 182–187, 68 and 41.

[*Microcystis*] *Nanina verticillata*, sp. n., Pease, Am. Journ. Conch. iii. p. 238, Moorea Island, Polynesia. Near *Helix brunnea* (Anton), "to which species it was referred by Mr. Cuming. It belongs to the *Nanina* family, in common

with all the small glassy species inhabiting Polynesia. Mucous papilla conical." Pease, *l. c.*

Nanina (Gray). The history and characters of the genus are reviewed by Martens, *l. c.*; the prolongation of the mantle, as well as the truncated appearance of the hinder extremity of the foot, shows different degrees in different species. Figures of the living animals of *N. citrina, amphidroma, javana, siamensis, rareguttata*, var., and *distincta* are given on pl. 6. Many of the subgenera established or admitted by Albers are better removed from this genus; the subgenus *Ariophanta* contains true *Naninæ*, but ought to be dissolved, as its distinctive character, the sinistrorsity of the shell, occurs in some species which in all other respects are very near to dextral ones. Jaws and teeth of several species, *l. c.* pp. 173, 174.

The true *Naninæ* of the Indian archipelago (except the Philippines) are arranged in the following manner:—

A. Variegatæ, corresponding to the greater part of *Xesta* (Albers); most species in the eastern half of the archipelago.

a. Apertæ: *N. sulfurata* (Martens), *l. c.* pl. 8. fig. 1, Batjan and Halmahera; *ignescens* (Pfr.), pl. 9. fig. 2, Batjan; *parcipila* (Martens), pl. 9. fig. 1, Island Adenare, east of Flores.

b. Festivæ: *citrina* (L.), including as varieties *tiara* (Beck), *columellaris* (Beck), *aurantia, prætexta*, and *opaca*, pl. 7. figs. 1–10, Ceram, Amboina, Buru, and Banda Islands. *N. aulica* (Pfr.), pl. 8. figs. 2 and 3, var. *gibbosa*, p. 201=Reeve, fig. 481 *c*; the only reliable locality for this species is the island Waigiu, near New Guinea; *N. vitellus* (Shuttl.), p. 396, Northern Celebes; *N. fulvizona*, sp. n., Mousson collect., Martens, p. 201, Southern Celebes.

c. Maculatæ: *N. wallacei* (Pfr.), Southern Celebes; *cidaris* (Lam. not Pfr.)=*tumens* (Desh.), the young=*moussoni* (Pfr.), pl. 9. fig. 3, Timor; *rareguttata* (Mouss.), including as varieties *sparsa* (Mouss.), *venusta* (Beck), and *crebriguttata=bella* (Pfr. partly), Sumbawa, Flores, and adjacent islands, pl. 9. figs. 4–6.

d. Trochiformes: *N. baliensis* (Mouss.), including *waandersiana* of the same author, pl. 8. fig. 4, Bali Island; *stuartiæ* (Sow.); *nemorensis* (Müll.)=*trochus* of Reeve, Conch. ii. f. 475, Southern Celebes; *trochus* (Müll.)=*circumpicta* (Mouss.), the young=*colorata* (Mouss.), including as variety *sulphurea* (Reeve), Southern Celebes; *bimacensis* (Mouss.), *halata* (Mouss.).

e. Carinatæ: *N. glutinosa* (Metcalfe), Borneo; and *riedelii* (Martens), pl. 8. fig. 5, Northern Celebes.

f. Intermediæ: *N. cincta* (Lea)=*stearsii* (Shuttl.)=*menadensis* (Mouss.), Northern Celebes; *umbilicaria* (Guillou)=*javanica* (Pfr., Mouss., Reeve) and *javana=javanensis* (Fér.)=*umbilicaria* (Pfr., Reeve) both in several varieties from Java; the former also from Sumatra and Banka.—*N. siamensis* (Pfr.), p. 71, pl. 6. fig. 6, may be ranged also with this division.

B. Sculptæ. *Hemiplecta* and *Rhyssota* (Albers); only in the western half of the archipelago.

g. Semicostulatæ: *N. bataviana* (Busch), Java; *arguta* (Pfr.), Sumatra and Java; *centralis* (Mouss.), Java; *rumphii* (Busch)=*Platycloster corneus* (van Hasselt), Java; *amphidroma* (Martens), some individuals

dextral, others sinistral, pl. 11. figs. 2 and 5, including as varieties *martini* (Pfr.) and *mackensiana* (Souleyet), Malacca, Singapore, Sumatra, and Borneo; *nasuta* (Metcalfe), Borneo; *albersi* (Martens)=*janus* (Pfr., Reeve), Malacca; *hugonis* (Pfr.); *regalis* (Bens.), Borneo; *janus* (Chemn.), pl. 11. fig. 4, Borneo; *clypeus* (Mouss.), Java; *striata* (Gray) =*naninoides* (Bens.)=*isabella* (Hombron and Jacqu.), Singapore and Pulo Pinang; *N. rugata* (Martens)=*cidaris* of Reeve and others, not of Lamarck, pl. 10. fig. 3, Southern Celebes.

h. Semirugulosæ: *N. densa* (Adams), including as varieties *schumacheriana* (Pfr.), *corrosa* (Mouss.), and *atrofusca* (Albers), pl. 10. figs. 1 and 1 *b*, Borneo, very nearly allied to *cymatium* (Bens.), *chevalieri* (Souleyet), and some others.

i. Solidæ: *humphreysiana* (Lea), including *gemina* (Busch), with several varieties, pl. 10. figs. 2, 2 *b*, and 4, Malacca, Singapore, and Java; *obliquata* (Reeve), Sumatra; *monozonalis* (Lam.), locality not ascertained; *virens*, sp. n., Martens, p. 237=? *tumens* of Pfeiffer and Reeve, not Desh., Sumatra; *sumatrensis*, sp. n., Mousson collect., Martens, p. 237. Here may be inserted the Siamese *N. distincta* (Pfr.), which comes very near to the larger *lampas* (Martyn)=*pernobilis* (Fér.), Martens, pp. 70, 71.

k. Giganteæ: *N. borneensis* (Pfr.), *brookei* (Adams & Reeve), Martens, p. 238; further the Philippine *ovum* (Val.), Martens, p. 88.

[*Nanina*] *Helix celebensis* (Pfr.). An emendated description is given by Sowerby, Journ. Conch. xv. pp. 111–115. It is to be regretted that no further particulars concerning its locality are given, and that it has not been compared with *N. striata* (Gray). Martens thinks that the locality given for it, "Rhwo," is not in Celebes, but the Dutch island Rhio, or Riouw, near Singapore, and that it may possibly be only a variety of *striata*. Preuss. Exped. p. 229.

[*Nanina*] *Helix gervaisii*, sp. n., Dubreuil, Annal. Soc. Malac. Belg. ii. p. 49, pl. 3. Said to come from the Philippines, 83 millims. in diameter.

[*Nanina* ?] *Helix bigoti*, sp. n., Crosse, pp. 210 and 442, pl. 12. fig. 4. Allied to *H.* [*N.*] *troglodytes*, Island Mayotte, Eastern Africa.

There is another group of *Naninæ*, distinguished by its glossy shell, narrow, rounded whorls, *Macrochlamys* (Bens.)=*Orobia* (Albers partly), which latter name was originally destined, and is to be left, for the Himalayan species of rather wax-like appearance. This subgenus is represented in Transgangetic India by *N. resplendens* (Phil.) in Birma, *resplendens*, var. *obesior*, Martens, p. 72, pl. 12. fig. 6, *hainesi* (Pfr.) and *mitiuscula*, sp. n., Martens, p. 73. fig. 10, in Siam, and by the following in the Indian archipelago:—*consul* (Pfr.), *jucunda* (Pfr.), *l. c.* fig. 7, *hyalina* (Martens), fig. 5, *aglaja* (Pfr.), fig. 13, all four in Borneo and the adjacent islands; *fulvocarnea* (Martens), fig. 8, Northern Celebes; *convoluta* (Desh.) and *aurea* (Martens), fig. 12, both in Sumatra; *ophiria* (Pfr.), Malacca; *infans* (Pfr.), Borneo. Martens, *l. c.* pp. 187–244.

Macrochlamys minima and *M. perlucida*, spp. nn., H. Adams, Proc. Zool. Soc. 1867, p. 303, pl. 19. figs. 2 and 3, Mauritius.

Nanina (? *Rotula*) *conulus*, sp. n., H. Adams, *l. c.* p. 307, pl. 19. fig. 16 (living animal), Ceylon, nearly allied to *concavospira* (Pfr.).

[*Zonites*] *Helia corax* (Parreiss), Pfeiffer, Novitat. Conch. pl. 78. figs. 1–5.

Trochomorpha (Albers, as subgenus) is generically distinguished by the

absence of the mucus-pore at the extremity of the foot, and subdivided by Martens, *l. c.* pp. 245–254:—

a. *Nigritella* (Martens): *T. ternatana* (Guillou, as *Helix*), including as variety *H. batchianensis* (Pfr.), pl. 13. fig. 1*a*–1*e*, jaw p. 173, varying remarkably in height, found in all the islands from Ternate to Batjan, allied to *goniomphala* and *beckiana* (Pfr.).

b. *Videna* (Adams): *hartmanni* (Pfr.), island Morotai, on the north-east coast of Halmahera; *timorensis*, sp. n., Martens, *l. c.* p. 248, pl. 13. fig. 6, Timor; *planorbis* (Less.), including as varieties *approximata* (Guillou, partly), *appropinquata* and *javanica* (Martens), pl. 13. figs. 4, 7, and 8, found in most islands of the Indian archipelago, spiral striæ more or less developed; *lardea* (Martens), *l. c.* fig. 5, Amboina; *tricolor* (Martens), fig. 3, Buru; *bicolor* (Martens), fig. 2, Sumatra, Borneo, and Java; *conus* (Phil.), Java and perhaps Sumatra.

The following species, known from the shell only, are doubtful as regards their pertaining to *Trochomorpha*, *Nanina*, or *Helix*; they are all described from Indian specimens. *Helix jenynsi* (Pfr.), sent by Zollinger from Java; *H. lychnia* (Bens.), Singapore; *H. tropidophora* (Adams & Reeve), and *H. conicoides* (Metcalfe) = *labuanensis* (Pfr.) = *vitrea* (Bonnet), both from Borneo; *H. ceroconus* (Pfr.), Labuan; *Zonites micula*, sp. n., Mouss. collect., Java: Martens, *l. c.* pp. 254–258. *H. insculpta* (Pfr.), said to have been found in Siam, *l. c.* p. 74.

[*Trochomorpha*] *Helix saigonensis*, sp. n., Crosse, Journ. Conch. xv. p. 208, pl. 6. fig. 2, Saigon et Pulo Condore.

Trochomorpha partunda, sp. n., Angas, Proc. Zool. Soc. 1867, p. 890, pl. 43. figs. 13–15, Solomon archipelago.

[*Hyalina*] *Zonites pazi*, sp. n., Bourguignat, Moll. Nouv. fasc. vii. 1866, p. 212, pl. 33. figs. 1–6, Sierra de Guadarrama, Spain, near *Z. testæ* (Phil.).—*Z. subglaber*, sp. n. (Bourguignat), Taslé, Catal. Moll. du Morbihan, Brittany.—*Z. eurabdotus*, *blidanensis*, and *pomelianus*, spp. nn., Bourguignat, Moll. Nouv. fasc. viii. pp. 225–230, pl. 37. figs. 1–5, 9–12, and 17–20, Algeria.

[*Hyalina*] *Helix pura* (Alder), found also in Mantchouria, Schrenck, *l. c.* p. 685.

Hyalina sinulabris (Martens), *l. c.* p. 73, Siam; *H. amboinensis* (Martens), *l. c.* p. 244, pl. 12. fig. 11, Amboina, Buru, and Banda Islands.

Hyalina hornii (Gabb), Tryon, Am. Journ. Conch. iii. p. 163, pl. 7. figs. 36–38.—*Helix inornata*, *fuliginosa*, *indentata*, *cellaria*, *arborea*, *electrina*, and *binneyana* (Morse), figured by Morse, Am. Naturalist, i. pp. 313, 314, 413, 541, and 542.

[*Hyalina*] *Helix subhyalina*, sp. n., Pfeiffer, Mal. Blätt. xiv. p. 196, Vera Cruz.

[*Pseudohyalina*] *Helix exigua*, *minuscula*, *milium*, and *ferrea* figured by Morse, Am. Naturalist, i. pp. 543, 544.

Conulus chersinella (Dall.), Tryon, Am. Journ. Conch. iii. p. 162, pl. 7. figs. 33–35.—*Helix chersina* and *minutissima* figured by Morse, Am. Naturalist, i. pp. 544 & 547.

Helix fulva, found near Nikolajewsk, Schrenck, *l. c.* p. 685.

Gastrodonta significans (Bland), Tryon, Am. Journ. Conch. iii. p. 163, pl. 7. figs. 39–41.—*Helix suppressa* and *multidentata* figured by Morse, *l. c.* pp. 411 & 543.

[*Macrocyclis*] *Helix concava* figured by Morse, *l. c.* p. 412.

Odontognatha.

Arion mabillianus, sp. n., Bourguignat, Moll. Nouv. fasc. vii. 1866, p. 173, pl. 29. f. 1–4, Département d'Aube, France. [Appears to resemble very much Draparnaud's *subfuscus*; the author omits to compare it with this species.] *A. tenellus* (Müll.) = *A. virescens* of Millet, described and figured in the same work, p. 175, pl. 29. figs. 5–7, Northern France. [Ought to be compared with Faure-Biguet's and Férussac's *A. melanocephalus*.] *A. anthracius*, sp. n., Bourguignat, *l. c.* p. 178, pl. 29. figs. 8–10; "it ought not to be taken for a young *A. ater*," Eaux Bonnes, Dép. Basses Pyrénées.—*A. rubiginosus*, sp. n. (Baudon in litt.), Drouet, Moll. Côte d'Or, p. 26, Dép. Côte d'Or, France.

Arion hortensis (Fér.) = *Limax fasciatus* (Nilss.), very well agreeing with Férussac, pl. 8*a*. fig. 3, from Mantchouria, Schrenck, *l. c.* p. 691.

Arion foliolatus (Gould), figured in Am. Journ. Conch. iii. pl. 16. figs. 9, 10.

Geomalacus. The known species are enumerated and described by J. Mabille. They are:—*G. maculosus* (Allman), Ireland, *G. andrewsi*, sp. n., also Ireland; *G. anguiformis* (Morelet as *Limax*), Portugal; *G. intermedius* (Norman as *Arion*), Valenciennes, Northern France; *G. bourguignati*, *paladilhianus*, and *moitessierianus*, spp. nn., all three in the Wood of Meudon, near Paris. Revue et Mag. Zool. 1867, pp. 53–64.—*G. hiemalis*, sp. n., Drouet, Moll. Côte d'Or, p. 27, Fixin, Dép. Côte d'Or, France.

Letourneuxia, g. n., Bourguignat. Pulmonary orifice situated in the foremost part of the shield; shelly plate thick, without concentric lines; jaw crenated, without median prolongation; foot deeply divided from the sides of the back; no muciparous pore at its extremity. *L. numidica*, sp. n., Bourguignat, Moll. Nouv. fasc. vii. 1866, p. 201, pl. 34. figs. 1–7, Tlemcen, Algeria.

Xanthonyx, g. n., Fischer, Journ. Conch. xv. p. 212, pl. 10. figs. 1–4. Shell like *Vitrina*; jaw ribbed like *Arion*; teeth of the radula with broad, subquadrangular base, like *Arion* and *Helix*. Only one mucus-vesicle, like *Helix lenticula*. No sagitta amatoria. Flagellum well developed. The only known species was described some months ago, in the same journal, by A. Brot, as *Vitrina sumichrasti*, sp. n., p. 70, pl. 4. fig. 2, Mexico. In a subsequent paper, pp. 221–227, Crosse and Fischer give the conchological description of the new genus at length, and refer to it also *Simpulopsis salleana* (Pfr.) and *cordovana* (Pfr.).

[*Patula*] *Helix infecta* (Parreiss), Pfeiffer, Novitat. pl. 78. fig. 14–16, said to be from Canada.—*H. xanthochroa*, sp. n., Crosse, Journ. Conch. xv. p. 199, pl. 6. fig. 2, locality unknown.—*H. striatella* and *asteriscus*, figured by Morse, Am. Naturalist, i. pp. 545 & 546, *H. alternata*, p. 137.

[*Patula*] *Helix elegantula*, sp. n., Pfeiffer, Mal. Blätt. xiv. p. 196, Vera Cruz.

Patula quadrispira (Martens), *l. c.* p. 259, pl. 13. fig. 9, Ceram.

Patula, subgenus *Macrocycloides* (Martens). With varnished glossy epidermis and rounded whorls. *P. obscurata* (Adams & Rv. as *Helix*), Borneo; and *lutea* (Martens), *l. c.* pl. 12. fig. 16, Buru. To this subgenus belong also *Helix cosmia* (Pfr.), *vernicosa* (Krauss), *bullacea*, *lampra*, and *veronica* (Pfr.), Martens, *l. c.* pp. 259–261.

Entodonta lamellosa (Fér.), young individuals found in the umbilicus of the old. Mörch, Journ. Conch. xiii. p. 395, and xv. p. 257.

[*Entodonta* ?] *Helix labyrinthica* and *lineata* (Say), figured by Morse, Am. Naturalist, i. pp. 545, 546.

Helix. The conchologist is still compelled to enumerate under this name numerous species, the jaw of which is either not known, or deviates but slightly from the type exemplified by *Helix pomatia*, and to divide them into a rather large number of groups founded on the general aspect of the shell, and on the habitat—the anatomical structure of the exotic groups being too little known at present. The Recorder's researches show that the jaw is typical in *H. sieboldiana, peliomphala, quæsita, cicatricosa, argillacea, unguiculastra*, and *pubicepa*, which correspond to the groups *Acusta, Camena, Chloritis*, and *Albersia*, as also in *Cochlostyla metaformis*, whilst it is smooth, with crenated edge, in *H. ptychostyla* (group *Plectotropis*), and smooth or nearly so in *H. brasiliana, exceptiuncula, zonalis, pyrostoma* (groups *Solaropsis, Planispira*, and *Phania*), but faintly striated in *H. zonaria*, and even faintly ribbed in *H. loxotropis* (which form also part of *Planispira*). These, as well as *Nanina amphidroma*, which is a true *Nanina* with reflected peristome, are rather unwelcome instances, proving that it is by no means safe to draw an inference from the form of the peristome as to the structure of the jaw. Martens, Preuss. Exped. ii. p. 173.

a. Species from Europe, Northern Africa, and Western Asia:—

[Group Gonostoma.] *Helix constricta* (Bonbée) found alive in the wood of Lourdes, Hautes Pyrénées, by D. Guestier; jaw described by J. B. Gassies, Journ. Conch. xv. pp. 15–17. A somewhat different account of the jaw, and some anatomical details, given by St. Simon, ibid. p. 98.

[Group Fruticicola.] *Helix ptilota*, sp. n., Bourguignat, Taslé, Catal. Moll. Morbihan, Brittany.—*Helix brigantina*, sp. n., Mengo, Jornal de Sciencias Mathematicas phys. e nat. Lisboa, vol. ii. 1867, p. 170, Bragança, Portugal. Allied to *H. inchoata* (Morelet). An abstract of the description in Journ. Conch. xv. p. 344.—*Helix villersii*, sp. n., Malzine, Faune Malacol. Belg. p. 74, pl. 3. figs. 1–3, Abbey of Villers, is said to be near *H. sericea* and *hispida*, but of a beautiful milky-white diaphanous colour [either an albino or discoloured, or belonging to quite another group than *sericea*; the figure is insufficient, the side view not being well drawn].—*Helix dussertiana*, sp. n., Bourguignat, Moll. Nouv. viii. p. 252, pl. 38. figs. 10–14, Algeria.

[Group Xerophila.] *Helix paladilhi*, sp. n., Bourguignat, Moll. Nouv. fasc. vi. (1866) p. 180, pl. 30. figs. 1–5, Montpellier. Allied to *H. costulata* (Ziegl.) [which is *H. striata*, Müll.].—*H. rokniaca* and *salonniana*, spp. nn., Bourguignat, *l. c.* viii. 1867, pp. 250 and 254, pl. 38. figs. 5–9, and pl. 37. figs. 15–16, Algeria.

Helix variabilis. Gassies states that specimens of this species are found in South-western France, resembling in certain points *H. cricetorum* and *H. fasciolata*, and that neither the elevation of the spire nor the relative size of the umbilicus are constant distinctive characters. He is inclined to regard such specimens as the produce of the interbreeding of these species. Malacol. de l'Aquitaine (Act. Soc. Linn. Bordeaux, xxvi.), p. 9.

[*Helix*, subgen. *Cochlicella*] *Bulimus pringi* (Pfr.), Novitat. Conch. pl. 82. figs. 19–22, Portugal.

[Group CAMPYLÆA.] *Helix brocardiana, romagnoli* (Moq.-Tand.), *omphalophora*, and *cyrniaca* are said to be new species from Corsica; all are most nearly allied to *H. raspaili* (Payr.), the second is the variety *hispidula*, the two last are the variety *umbilicaris* of *H. raspaili* in Moquin-Tandon's work. Dutailly, Revue et Mag. Zool. 1867, pp. 95–101.—*H. cyrniaca* has been discovered on the Mount Renoso, 2300 metres above the sea, by E. Revelière, and has been named *H. revelierei* by Debeaux (22 days before Dutailly). Journ. Conch. xv. p. 308, pl. 8. fig. 1.—*Helix velascoi*, sp. n., Hidalgo, Journ. Conch. xv. p. 440, pl. 12. fig. 3, Province Vizcaya, Spain. Allied to *H. carascalensis* (Fér.).—*H. cardonæ*, sp. n., id. ibid. pp. 209 and 441, pl. 12. f. 3, Minorca.—*Campylæa gobanzi*, sp. n., Frauenfeld, Verh. zool.-bot. Gesellsch. Wien, xvii. p. 502, pl. 12. f. 25–27, Val Vestina, in Southern Tyrol. Allied to *H. cingulata*, but strongly plicated.

[Group TACHEA.] *Helix nemoralis* and *hortensis*. The possible variations of bands are once more enumerated by J. Sauveur. Ann. Soc. Malacolog. Belg. ii. pp. 59–108, pls. 4–6. [*Cf.* Zool. Record, iii. p. 195.]

[Group MACULARIA and IBERUS.] *Helix lactea* and *punctata* (Müll.). Bourguignat describes under a new specific name, *H. apalolena*, one of its forms, giving figures of all three, Moll. Nouv. viii. pp. 231–235, pl. 25. figs. 1–5 (*apalolena*), figs. 6–8 (*punctata*), pl. 36. figs. 1–8 (*lactea*). He finds also some differences in the generative organs, consisting principally in colour, and gives woodcuts of these organs of all three forms, pp. 236–244. *H. apalolena* occurs in the north-eastern part of Spain, in the département Aude (Languedoc), and in the island of Majorca.—*Helix jourdaniana*, sp. n., Bourguignat, *l. c.* p. 245, pl. 38. figs. 1–4, Algeria.—*Iberus ornatus* (Beck) between *Helix gualtieriana* and *H. campesina*, shortly noticed by Mörch, Journ. Conch. xv. p. 258.—*Helix scherzeri*, sp. n., Zelebor, Verhandl. zool.-bot. Gesellsch. Wien, xvii. p. 805, Gibraltar. Allied to *H. melitensis* (Fér.).—*Helix kurdistana* (Parreiss), Pfr. Novitat. Conch. pl. 78. figs. 6–8; a variety of it, called *H. baschkira* by Parreiss, figs. 9, 10. Closely allied to *H. guttata* (Olivier) and *H. codringtoni* (Gray).

Helix thayaca, sp. n., Bourguignat, Moll. Nouv. viii. p. 248, pl. 38. figs. 15–18, entrance of the cave on the Djebel Thaya, province of Constantine, Algeria. Compared by the author with *H. banatica*, but with a rather peculiar appearance.

β. Species from Eastern Asia :—

Helix weyrichii, sp. n., Schrenck, *l. c.* p. 669, pl. 26. figs. 11–13, Island of Sachalin; *H. selskii* (Gerstf.), imperfectly known before, Schrenck. *l. c.* p. 665, pl. 26. figs. 7–10, Mantchouria. Further, there have been found in Mantchouria the Chinese species *H. ravida* (Benson) and *H. arcasiana* (Crosse et Debeaux), the latter enumerated in Gerstfeldt's paper on the same subject as *H. fruticum*, the Siberian *H. schrenckii* (Midd.), the European *H. rufescens*, named *C. strigella* in Gerstfeldt's paper, *sericea, hispida, pulchella*, and *rudenata*. Peculiar to Mantchouria are *H. maackii* (Gerstf.), *middendorffii* (Gerstf.), allied to *pyrrhozona* (Phil.), *selskii*, and finally *H. amurensis* (Gerstf.), allied to the European *aculeata*. Schrenck, *l. c.* pp. 662–665.

Helix setocincta, sphinctostoma, patruelis, miranda, serotina, spp. nn. (A. Adams, MS.), and *H. conulina*, sp. n., Martens = *Zonites conulus* (A. Adams, MS.), all from the Japanese Islands, briefly characterized, from specimens in

Cuming's collection, by Martens, Preuss. Exped. Zool. ii. pp. 19, 21, 23, 24, and 30.—*H. friedeliana* (Martens), *l. c.* p. 19, pl. 14. fig. 10, Nangasaki, allied to *chinensis* (Phil.); *H. japonica* (Pfr.)=*vitracea* (Fér.), *l. c.* p. 20, pl. 14. fig. 11, varies considerably in the height of the spire; *H. conospira* (Pfr.?), *l. c.* p. 23, pl. 14. fig. 7, a variety of it p. 24.—*H. peliomphala* (Pfr.)=*japonica* (Fér.), *l. c.* p. 25, pl. 15. figs. 1–3, common at Yokohama, var. *luchuana* of the same=*H. luhuana* (Sow.), Loochoo Islands and Nangasaki, *l. c.* p. 27, pl. 15. fig. 4; *H. quæsita* (Desh.)=*perryi* (Jay), *l. c.* p. 28, pl. 15. fig. 5, Yokohama; *H. myomphala* (Martens)=*daimio* (Adams, MS.), *l. c.* p. 29, pl. 15. fig. 6, Nangasaki.

Helix sarelii, sp. n., Martens, Preuss. Exped. Zool. vol. ii. p. 44, upper valley of the Yangtse-kiang; *H. trisinuata*, sp. n., Martens, *l. c.* p. 51, Pfr. Novitat. Conchol. pl. 82. figs. 16–18, Hongkong; *H. pulvinaris* (Gould), *l. c.* p. 51, pl. 14. fig. 9, Hongkong; *H. platyodon* (Pfr.) in a collection of Chinese shells sold at Canton, *l. c.* p. 50.

[*Helix*] *Namina ravida*. Some remarks on this species and its near relation to *N. redfieldi* are given by Baird and Adams, Proc. Zool. Soc. p. 491.

Dorcasia (Gray)=*Galaxias* (Beck). Some remarks by Mörch, Journ. Conch. xv. pp. 256, 257.—*Helix striatula* (O. F. Müller) = *pyrrhozona* (Philippi), ibid.

γ. Species from India and the Indian archipelago:—

Helix attegia (Bens.), Pfeiffer, Novitat. Conch. pl. 78. figs. 17–19.

Helix ptychostyla (Pfr.), from Bangkok. Shell, teeth of the radula, and jaw described by Martens, Preuss. Exped. Zool. ii. p. 74, pl. 13. fig. 12, woodcuts pp. 173 and 174.

Helix revoluta, sp. n., Pfeiffer, Mal. Blätt. xiv. p. 64, Andaman Islands, sinistral.—*H. frauenfeldi*, sp. n., Zelebor, Verhandl. zool.-bot. Gesellsch. Wien, xvii. p. 805, Nicobar Islands.

Helix similaris (Fér.). Specimens from Rio Janeiro, Japan (including *H. stimpsoni* (Pfr.) and *genulabris*, Martens), China (including *woodiana* (Lea), *cestus* (Bens.), and *arcasiana*, Crosse), Siam, Singapore, Java, Celebes, and Timor. Martens, *l. c.* pp. 7, 19, 43, 76, and 270.

Helix smirnensis (Mouss.) redescribed by Martens, *l. c.* p. 268, Eastern Java; *H. miliacea* (Martens)=*milium* (Martens, 1864, not Morse), *l. c.* pl. 12. fig. 15, Amboina; *leucophlæa*, sp. n., Martens, *l. c.* p. 269, pl. 12. fig. 14, Northern Celebes; *conulus* (Martens, 1864)=*gysseriana* (Pfr. 1865), *l. c.* pl. 13. fig. 15, Sumatra; *helicinoides* (Mouss.), *l. c.* p. 270, Java; *mendax* (Martens), *l. c.* pl. 13. fig. 14, Timor; *transversalis* (Mouss.), *l. c.* p. 273, Madura and Bali; *argillacea* (Fér.), Martens, *l. c.* p. 273, jaw p. 173, very common in Timor and Flores; *crassula* (Phil.), *l. c.* p. 276, Sumatra and Java.

Helix (*Rhagada*) *solorensis* (Martens), *l. c.* p. 277, pl. 17. fig. 3, Island Solor near Flores.

Helix (*Plectotropis*) *intumescens*, sp. n., Martens, *l. c.* p. 263, pl. 13. fig. 10, Eastern Java; *rotatoria* (Busch), Java and Flores; *winteriana* (Pfr.), *l. c.* pl. 13. fig. 11, Siam, Borneo, Sumatra, Java, Flores, and Moluccas; *sumatrana* (Martens), *l. c.* pl. 13. fig. 13, Sumatra; *sumatrana*, var. *moussoniana*, *l. c.* p. 266, Eastern Java; *squamulosa*, sp. n., Mousson collection, Martens, *l. c.* p. 266, Island Madura near Java; *orbicula* (Hutton), found also in Java by Zollinger, Martens, *l. c.* p. 267; *ptychostyla* (Martens), *l. c.* p. 74, pl. 13. fig. 12, Siam.

Helix (*Chloritis*) *unguiculina* (Martens), *l. c.* p. 278, pl. 14. fig. 5, Island Buru; *ungulina* (L.), with var. *pallidior*, Ceram; *unguiculastra* (Martens), *l.* 14. fig. 1, Buru and Amboina, var. *pilosa*, p. 282; *unguicula* (Fér.), Ceram?; *zodiacus* (Fér.), Celebes; *tuba* (Albers), Celebes, not New Guinea; *bulbulus* (Mouss.), *l. c.* pl. 17. fig. 2, and pl. 19. fig. 4, Southern Celebes; *expansa* (Pfr.) = *anozona* (Martens), pl. 14. fig. 3, Batjan; *quadrivolvis* (Martens), pl. 14. fig. 6, Borneo. Martens, *l. c.* pp. 278–288, 397.

Helix (*Obba*) *quoyi* (Desh.), *mamilla* (Fér.), and *papilla* (Fér.), Martens, *l. c.* p. 289–292, Northern Celebes; *calcar* (Martens), pl. 17. fig. 5, Halmahera; *sororcula*, sp. n., Martens, *l. c.* p. 294, pl. 17. fig. 4, Northern Celebes. Martens, *l. c.* pp. 289–294.

Helix, group *Planispira*: *exceptiuncula* (Fér.), Martens, *l. c.* pl. 18. fig. 3, including as varieties *phryne* (Pfr.) and *aspasia* (H. Adams); *zonalis* (Fér.) = Lister, Hist. Conchyl. pl. 72. fig. 71; *quadrifasciata* (Guillou), pl. 16. fig. 4, var. *edentata* of the same, fig. 5; *endoptycha* (Martens), *l. c.* fig. 2, very nearly allied to *porcellana* (Grateloup), *l. c.* p. 397; *flavidula* = *flaveola* (Martens, 1864, not Krynicki), pl. 14. fig. 4, Southern Celebes; *mersispira* (Martens), *l. c.* fig. 8; *loxotropis* (Pfr.), pl. 16. figs. 2 and 3, including the varieties *bernsteinii*, *laticlavia*, *angusticlavia*, *pluricincta*, and *H. lorquini* (Pfr.); *ataeta* (Pfr.), pl. 16. fig. 1; *zonaria* (L.), pl. 16. figs. 6–11, and pl. 19. fig. 6 (living animal), including the varieties *lineolata* from Amboina, *fulminata* from Buru, *obliquata*, *maculata*, *lunulata*, and *fasciata* from Ceram; *fasciolata* (Less.), Ceram?; *zebra* (Pfr.) = *guttata* (Guillou), Ceram and Goram; *aurita* (Martens), pl. 16. fig. 12; *biconvexa* (Martens), fig. 13, and *scheepmakeri* (Pfr.). All the species, except *zonaria*, *fasciolata*, and *zebra*, are peculiar to the first group of the Moluccas, comprising Halmahera, Ternate, Batjan, and the adjacent small islands. Martens, *l. c.* pp. 295–318.

Helix, group *Papuina* = *Geotrochus* of Beck, not of Hasselt, which is *Trochomorpha*: *albula* (Guillou), Martens, pl. 17. fig. 6 = *vitrea* (Fér.), and *H. lanceolata* (Pfr.), fig. 7, both from Ternate and Moti. *H. pileolus* (Fér.), with lower and higher varieties, *l. c.* figs. 8–10, Batjan. *H. pileus* (Müll.), from the Aru Islands; the variations of its bands described, Martens, *l. c.* pp. 318–324.

Helix, group *Phania*: *pyrostoma* (Fér.), Martens, *l. c.* pl. 17. fig. 1, Halmahera; *xanthostoma*, sp. n. (Herklots), Martens, *l. c.* p. 327, Batjan; *sulcocincta* (Martens), pl. 18. fig. 1, Batjan, allied to *illustris* (Pfr.), Martens, *l. c.* pp. 325–329.

Helix, group *Albersia*: *pubicepa* (Martens), pl. 18. fig. 2, Halmahera and Batjan; *najas* (Pfr.), pl. 18. fig. 4, Buru. Martens, *l. c.* pp. 329, 330.

δ. Species from Australia and Polynesia:—

Helix retipora, sp. n., Cox, Proc. Zool. Soc. p. 39, Flinders Range, South Australia: allied to *H. sericatula*.—*H. lampsoides*, *hamiltoni*, *diemenensis*, *wellingtonensis*, *albanensis*, *penolensis*, *turriculata*, *avidorum* [*aridorum*?], *arcescens*, *pachystyloides*, *mucosa*, and *pexa*, spp. nn., Cox, *l. c.* pp. 722–726 the four first from Tasmania, the others from the continent of Australia.

Sphærospira is a new name given by Mörch to the Australian *H. fraseri* (Gray), *appendiculata* (Pfr.), and *lessoni* (Fér.). Journ. Conch. xv. p. 256.

Geotrochus gamelia, *eros*, *ambrosia*, *coxianus*, and *mendana*, spp. nn., Angas, Proc. Zool. Soc. 1867, pp. 888, 889, pl. 43. figs. 1–12, Solomon archipelago.

Helix mariei, sp. n., Crosse, Journ. Conch. xv. pp. 211 and 312, pl. 11. fig. 1,

New Caledonia: allied to *H. montrouzieri*.—*H. cabriti* (Gassies), from the same island, redescribed and figured, ibid. p. 315, pl. 11. fig. 2.—*H. vieillardi*, sp. n., Crosse et Marie, ibid., p. 58, pl. 4. fig. 3, New Caledonia, 121 metres above the sea.—*H. opaoana*, Gassies, ibid. p. 61, Island Art.—*H. lombardoi, scisseti, lifuana*. These names are corrected into *lombardeaui, saisseti*, and *lifouana* [!] by E. Marie, ibid. p. 17.

Helix henschei, sp. n., Pfeiffer, Mal. Blätt. xiv. p. 197, New Caledonia.—*H. leucolena*, sp. n., Crosse, Journ. Conch. xv. pp. 447, Island Vaneva-Levi Feejee group.—*H. assimilis*, sp. n., Pease, Am. Journ. Conch. iii. p. 227, Tahiti: allied to *H. radiella* (Pfr.).

Helix corneofulva, Pfeiffer, Novitat. Conch. pl. 78. figs. 11–13, New Zealand.

ε. Species from Africa :—

Helix moniziana, sp. n., Paiva, Monogr. Moll. Mad. p. 64, pl. 2. fig. 1, allied to *H. coronula*.—*H. latinia* (Paiva), *l. c.* p. 58, pl. 2. fig. 5, allied to *H. depauperata*.—*H. tetrica* (Paiva), *alleniana, gomeziana*, and *barbozæ*, spp. nn., Paiva, *l. c.* pp. 86–90, pl. 1. figs 7, 4, 5, and 6, all from Madeira.

Stylodonta (*Erepta*) *rufocincta* and *nevilli*, spp. nn., H. Adams, Proc. Zool. Soc. 1867, p. 303, pl. 19. figs. 4 and 5, Mauritius.

ζ. Species from Tropical America :—

Helix brasiliana (Desh.), a living specimen figured by Martens, Preuss. Exped. Zool. ii. p. 7, pl. 19. fig. 1.

Helix raimondii, huanucensis, pellis-colubri, tschudiana, alsophila, spp. nn., from Peru. Philippi, Mal. Blätt. xiv. pp. 65–67. The two last nearly allied to *H. clausomphalos* (Hupé).—*H. cuyana*, sp. n., Strebel, described by Pfeiffer, ibid. p. 79, Peru. All figured in Novitat. Conchol. pl. 79. The specific names *H. andicola* and *pazi* (Philippi) being preoccupied, are changed by Pfeiffer into *H. andium* and *H. minvillei*, ibid. p. 79.—*H.* (*Solaropsis*) *rosarium* (Pfr.) and *castelnaui* (Hupé), from Upper Peru, described by Martens, Mal. Blätt. xiv. p. 133.

Helix æquatoriana, sp. n., Gonzalez Hidalgo, Journ. Conch. xv. p. 307, pl. 8. fig. 2, Ecuador: allied to *H. atrata* (Pfr.).—*H. amori*, sp. n., Gonzalez Hidalgo, ibid. p. 71, pl. 1. fig. 3, Ecuador [group *Solaropsis*].

Helix milleri and *H. salcatoris*, spp. nn., Pfeiffer, Mal. Blätt. xiv. pp. 126, 127, Bahama Islands, the first allied to *H. varians* (Menke), the other to *H. bahamensis* (Pfr.).

Helix subacuta, sp. n., Pfeiffer, Mal. Blätt. xiv. p. 127, Jamaica, allied to *H. acuta* and *carmelita* (Fér.).—*H. juliana* (Fér.)=*lucerna*, var. β, in Pfeiffer's Monograph, vol. i., redescribed by Pfeiffer, ibid. p. 128, also from Jamaica.

η. Species from California :—

Helix. The Californian species have been reviewed, principally with regard to their distribution into subgenera, by J. G. Cooper, Proc. Calif. Acad. Nat. Sc. iii. The subgenera *Aglaja, Arionta*, and *Polymita* are rejected as foreign types, but *Hyalina, Conulus*, and *Patula* acknowledged. The author remarks that the Californian species are *generally sufficiently* distinct, although hybrids undoubtedly occur: and, indeed, Dr. Newcomb has bred many specimens in his garden which combine the characters of several species, so that it is *impossible* to determine their names. By these observations, Tryon (Am.

Journ. Conch. iii. p. 326) has his suspicions strengthened that many of the so-called Californian species are really untenable.

[*Helix*] *Aglaja sequoicola*, sp. n., Cooper, Proc. Calif. Acad. Nat. Sc. 1866, p. 259, or in Am. Journ. Conch. iii. p. 160, and figured pl. 7. fig. 27. Figures of *Agl. ayresiana*, *bridgesii*, *rowelli*, and *facta* (Newcomb) on the same plate.

Helix stearnsiana and *löhrii*, spp. nn., Gabb, Am. Journ. Conch. iii. pp. 235, 236, pl. 16. figs. 1 & 2, Lower California.—Of *H. remondi* (Tryon) the living animal has been found, and is described by Gabb, *l. c.* p. 236.

Helix veatchii found alive six years after it was collected. Stearns, Proc. Calif. Acad. Nat. Sc. iii. [Similar cases have been also observed by others in *Helix desertorum*, *Ampullaria*, &c.]

Helix bridgesi (Tryon) [see 'Zool. Record,' iii. p. 196] is changed into *H. parkeri* by the author, the former name being preoccupied. Am. Journ. Conch. iii. p. 105.

θ. Species from Eastern North America:—

Vallonia minuta (Say). Its identity with the European *pulchella* (Müll.) is contradicted by Tryon, Am. Journ. Conch. iii. p. 36, pl. 7. fig. 2 (*minuta*), fig. 1 (*pulchella*). The American *minuta* figured also by Morse, Am. Naturalist, i. p. 544.

Two species of the so-called genus *Ulostoma*, 19 of *Mesodon*, 5 of *Xolotrema*, 8 of *Triodopsis*, 2 of *Isognomostoma*, 10 of *Stenotrema*, 25 of *Dædalochila*, 7 of *Polygyra*, being all the North-American species known at present, are described and figured by Tryon, Am. Journ. Conch. iii. pp. 37–68, 155–160, pls. 2–5 and 7.—*H. albolabris*, *tridentata*, *sayi*, *dentifera*, *palliata*, *monodon*, and *hirsuta*, figured by Morse, Am. Naturalist, i. pp. 98, 99, and 150, 151. Of the first, the living animal, the radula, jaw, and some other anatomical details are figured.

Helix collaris, sp. n., Pfeiffer, Mal. Blätt. xiv. p. 197, locality not known aspect quite peculiar.

Cochlostyla mirabilis and *metaformis* (Fér.). Its variations in form and colour are treated of by Martens, Preuss. Exped. Zool. ii. pp. 89–92; the living animal of the former species, *l. c.* pl. 19. fig. 2, teeth and jaw pp. 173 and 174. —*C. zamboangæ* (Hombr. & Jacq.), Zamboanga on Mindanao, redescribed, *l. c.* p. 89; *C. leytensis* (Pfr.), full-grown specimens have a reflected peristome, *l. c.* p. 94; *C. zonifera* (Sow.) and *dubiosa* (Pfr.), their varieties passing into *speciosa* (Pfr.), *l. c.* p. 94; *C. rufogastra* (Less.), with varieties, *l. c.* p. 92.

Bulimus, group *Amphidromus*. An historical and geographical account of the species is given by Martens, *l. c.* Some individuals appear to have a reflected peristome whilst they retain the aspect and size of a young shell. The species may be brought to two subdivisions:—

a. Larger, rather bulky, generally presenting about equal numbers of dextral and sinistral specimens. They are spread over the Transgangetic peninsula, the larger islands of the Indian archipelago, and the Philippines, but are absent in Flores, Timor, and the Moluccas. *B. inversus* (Müll.), including *javanus* (Lea), *contusus* (Reeve), and *elongatus* (Hombr. & Jacq.), Siam, Malayan peninsula, and Sumatra; *loricatus* (Pfr.), pl. 22. fig. 2, Java; *melanomma* (Pfr.), including Reeve's fig. 187 *c*, very variable, Singapore and adjacent islands; *sultanus* (Lam.) = *makassariensis*

(Hombr. & Jacq.), pl. 22. figs. 1, 2, and 4, Southern Celebes and Java; *mitra*, sp. n., Island Bali; *interruptus* (Müll.), very variable in form and coloration, varieties *strigosus*, *infrapictus*, and *infraviridis*, pl. 20. figs. 1–3, 5, 6, and 8, 9, Celebes, Borneo, Bali, Java, perhaps Siam; *emaciatus*, sp. n., pl. 20. fig. 7, Java; *leucoxanthus* (Martens) = Reeve, fig. 187 *b*, locality not known; *perversus* (L.), var. *aureus* (Swains.), var. *obesus*, var. *tener*, and var.? *sulfuratus* (Hombr. & Jacq.); *chloris* (Reeve); *palaceus* (Busch) = *mundus* (Pfr.), Java; *appressus*, sp. n., Mousson, Java; *winteri* (Pfr.) = *purus* (Mouss.), pl. 20. figs. 4 & 10, Java. Martens, *l. c.* pp. 337–354.—*B. atricallosus* (Gould), *comes* (Pfr.), figured already by Gualtieri, pl. 5. fig. O, Chemnitz, vol. ix. figs. 932, 933 [and the Recorder may now add Swainson's Zool. Illustr. iii. pl. 166 as *virescens*], and *schomburgki* (Pfr.), including as varieties *crossei* (Pfr.), *mouhoti* (Pfr.), and var. *fasciatus*, pl. 21. fig. 1 = *B. glaucolarynx* (Dohrn), all in Siam. Martens, *l. c.* pp. 77–80.

b. Smaller and more slender, constantly sinistral. *B. sinistralis* (Reeve), *l. c.* pl. 21. fig. 2, Northern Celebes; *adamsi* (Reeve), fig. 5, Borneo; *furcillatus* (Mouss.), fig. 3 = *lævus*, var., Reeve, fig. 216 *a*, Java and Bali; *filozonatus*, sp. n., Mousson, in collectione, Java; *lævus* (Müll.), probably Tenimber Islands; *suspectus* (Martens), fig. 8, Timor; *contrarius* (Müll.), with some individual variations, figs. 7 *a*, *b*, and *c*, jaw p. 173, Timor, var. *subconcolor*, fig. 9, also Timor; *porcellanus* (Mouss.), Java; *sumatranus* (Martens), fig. 6, Sumatra. Martens, *l. c.* pp. 355–367.—*B. rameri* (Pfr.), Siam, *l. c.* p. 81. In this subdivision, which is spread over the whole Indian archipelago, except the Moluccas, some species come very near to one another, but their differences coincide much more with geographical limits than in the first subdivision.

Young specimens of species belonging to one or the other subdivision have generally dark bands on the under half of their whorls, so in *B. sultanus*, *l. c.* pl. 22. fig. 4, *winteri*, pl. 24. fig. 12, and *sinistralis*, fig. 11.

Bulimus (*Borus*) *valenciennesi* (Pfr.) = *popelairianus* (Nyst), its varieties in shape and colour described; *B. accelerans*, sp. n., allied to the preceding; finally, *B. sanctæ crucis* (*santacruzii*, Orb.), and some other allied forms compared by Martens, Mal. Blätt. xiv. pp. 135–139.—*B. crenellus*, sp. n., Philippi, ibid. p. 67, Pfr. Novitat. Conch. pl. 81. figs. 17, 18, Peru.

Bulimus (*Orphnus*) *foveolatus* (Reeve) and *bifasciatus* (Phil.), from Upper Peru; individual variations pointed out by Martens, *l. c.* p. 140.— *B. iserni*, sp. n., Philippi, *l. c.* p. 75, Pfr. Novitat. Conch. pl. 80. fig. 16–18, Peru.

[Group *Placostylus*] *Bulimus mariei*, sp. n., Crosse, Journ. Conch. xv. p. 187, pl. 7. figs. 1, 2, New Caledonia.—*B. pseudocaledonicus* (Montrouzier), redescribed by the same, p. 192.

[Group *Eurytus*] *Bulimus mabillei*, sp. n., Crosse, Journ. Conch. xv. p. 197, pl. 6. fig. 4, Columbia. Allied to *B. pulicarius* (Reeve).

Limicolaria hidalgoi, sp. n., Crosse, *l. c.* p. 446, locality unknown.

Achatina sinistrorsa (Chemn.) = *bicarinata* (Brug.). A pale pink variety figured by Pfeiffer, Novitat. Conch. pl. 76. fig. 1.

Perideris alabaster (Rang). Varieties of coloration, Pfeiffer, Novitat. Conch. pl. 76. figs. 2–5.

Goniognatha (Orthalicea).

[*Bulimulus*] *Drymæus* 2 species, *Liostracus* 3, *Mesembrinus* 3, *Thaumastus* 7, *Mormus* 2, *Scutalus* 3, *Peronæus* 1, *Leptomerus* 1, briefly described and figured by Tryon, Am. Journ. Conch. iii. pp. 164–174, pls. 8–10. [The Recorder, as editor of Albers's second edition, is obliged to protest against the practice of attaching generic value to those divisions (as *Drymæus, Liostracus*, &c. to *Leptomerus*); they were intended to be merely groups of species within the genus *Bulimulus*.]

Bulimus membielinus, sp. n., Crosse, Journ. Conch. xv. p. 445, Ecuador. Allied to *B. glaucostomus* (Albers) [group *Otostomus*].

Bulimulus involutus, sp. n., Martens, Mal. Blätt. xiv. p. 63, Brazil. Nearly allied to *B. navicula*.

Bulimulus canaliculatus (Pfr.), *interpictus*, and *chrysomelas*, spp. nn., all from Upper Peru, described by Martens, Mal. Blätt. xiv. pp. 142–145; figured in Novitat. Conch. pl. 82.

[*Bulimulus*] *Bulimus trujillensis, alsophilus, canarius, delicatulus, auris-ratti, stigmaticus, tapadoides, serenus, ignobilis, hamadryas, morbidus, cygneus, eurystomus, tarmensis, chenui, troscheli, nemorensis, miliaris*, and *productus*, spp. nn., Philippi, Mal. Blätt. xiv. pp. 68–77; figured in Novitat. Conch. pls. 80, 81, & 82. figs. 23 & 24.—*B. peliostomus, scalarioides*, and *nemorensis* are also new species described by Philippi, from Peru, Mal. Blätt. xiv. pp. 77, 78.

[*Bulimulus*] *Bulimus spirifer*, sp. n., Gabb, Am. Journ. Conch. iii. p. 236, pl. 16. fig. 5, Lower California.—*B. vesicalis* (Gould), from the same country, figured on the same plate, fig. 6, with the name *sufflatus*.

Bulimus (*Mesembrinus*) *gealei*, sp. n., H. Adams, Proc. Zool. Soc. 1867, p. 309, pl. 19. fig. 21, Mexico.

Liguus fasciatus (Müll.) and *pictus* (Reeve), Florida. Figured by Tryon, Am. Journ. Conch. iii. pl. 6.

Orthalicus undatus (Fér.), Florida. Figured by Tryon, *l. c.* ibid. pl. 7 figs. 1–3.

[Group *Porphyrobaphe*] *Bulimus jungairinoi*, sp. n., Hidalgo, Journ. Conch. xv. p. 72, pl. 4. fig. 4, Quito. Allied to *B. kellettii* (Reeve).

Aulacognatha (Pupacea).

[*Buliminus*] *Bulimus mastersi*, sp. n., Cox, Proc. Zool. Soc. 1867, p. 39, Port Lincoln, South Australia, near *B. trilineatus* [group *Liparus*].

Buliminus (subgen. *Rhachis*) *zonulatus* (Pfr.)=*spilozonus* (Martens), var. *celebensis* and var. *timorensis*, Martens, *l. c.* p. 368, pl. 21. figs. 13 *a* & 13 *b*.—

Bulimus landaueri, sp. n., Pfeiffer, Mal. Blätt. xiv. p. 197, locality not known.

Buliminus (subgen. *Napæus*) *siamensis* (Redfield), Martens, Preuss. Exped. Zool. ii. p. 81, pl. 19. fig. 17 (living animal); *apertus* (Martens, 1863, as *Pupa*), Martens, *l. c.* p. 370, pl. 22. fig. 6, Timor.—*Bulimulus* (*Ena*) *pusillus*, p. n., H. Adams, Proc. Zool. Soc. p. 307, pl. 19. fig. 17, Ceylon, sinistral.

Partula lirata (Mouss.). Teeth of the radula described and figured by Heynemann, Mall. Blätt. xiv. p. 148, pl. 1. fig. 1.

Partula obesa, sp. n., Pease, Am. Journ. Conch. iii. p. 223, pl. 15. fig. 12, locality unknown.—*P. affinis* and *lineolata*, spp. nn., Pease, *l. c.* p. 224, Tahiti. —*P. assimilis*, sp. n., Pease, *l. c.* p. 230, pl. 15. figs. 28, 29, Roratonga Island,

Polynesia.—*P. trilineata, elongata, gracilis, striolata, rustica, crassilabrum, umbilicata, vexillum, compacta, bilineata, stimulans*, and *variabilis* (Pease, 1866) figured in Am. Journ. Conch. iii. pl. 1.

Achatinella bulimoides (Swains.). Radula described and figured by Heynemann, Mal. Blätt. xiv. p. 149, pl. 1. fig. 2. This species is viviparous, like *Partula*; in the embryo the teeth of the radula are nearly as numerous as in the adult, but smaller. No jaw observed; but the teeth differ very much in shape from those of *Partula*, and agree in a striking manner with those of the genus *Janella*.

Tornatellina blandiana, sp. n., Pfeiffer, Mal. Blätt. xiv. p. 198, Trinidad. Belongs to the group *Leptinaria*.

Cionella (subgen. *Glessula*) *sumatrana* (Martens), *l. c.* p. 372, pl. 22. fig. 3.

[*Cionella*] *Pervassacia moitessieri, bugesi*, and *paladilhi*, spp. nn., from the alluvium of the river Lez, near Montpellier, and allied to *C. hohenwarthi* (Rossm.), Bourguignat, Moll. Nouv. fasc. vi. 1866, pp. 182–188, pl. 30. figs. 5–8, 12–14, and 18–20, *hohenwarthi* being represented by figs. 9–11, and the Algerian *cucharista* (Bourg.) by figs. 15–17, for comparison.—*P. cirtana*, sp. n., Bourguignat, *l. c.* viii. p. 256, pl. 37. figs. 6–8, Constantine, Algeria; nearly allied to *folliculus* (Gronov.).—*Achatina* (*Cionella*) *lowei*, sp. n., Paiva, Monog. Moll. Mad. p. 108, pl. 2. fig. 7, Madeira.

[*Cionella*] *Achatina lubrica* (Müll.), Mantchouria and Yesso, Schrenck, *l. c.* p. 659.

Cæcilianella lactea, sp. n., Moitessier, Rev. Zool. 1867, no. x., Montpellier.

Geostilbia, g. n., Crosse, Journ. Conch. xv. p. 184; *G. caledonica*, sp. n., ibid. p. 186, pl. 7. fig. 4. Distinguished from *Cæcilianella* by the columella not being distinctly truncate and the outer lip being thickened. Lives in moist spots, under leaves, decayed timber, and underground, New Caledonia. [Appears to be scarcely different from *Cæcilianella*.]

Stenogyra (subgenus *Opeas*). The species are generally widely distributed: *S. turricula* (Martens), *l. c.* p. 82, pl. 22. fig. 7, Siam; *erecta* (Pfr. as *Achatina*), *l. c.* pp. 52 and 83, China and Siam?; *fortunei* (Pfr.), *l. c.* p. 53, China; *laxispira*, sp. n., *l. c.* p. 373, pl. 22. fig. 11, Sumatra; *elongatula* (Pfr.), *l. c.* fig. 12, Philippines and Moluccas; *densespirata* (Mouss.), Java; *achatinacea* (Pfr.), fig. 9, Sumatra and Borneo; *gracilis* (Hutton as *Bulimus*) = *Bul. indicus* (Pfr.) = *Bul. apex* (Mouss.), pl. 22. fig. 13, and the living animal, pl. 19. fig. 5, from British India through Siam, Singapore, Sumatra, Borneo, Java, and Celebes to Timor and the Moluccas; *panayensis* (Pfr. as *Bulimus*), pl. 22. fig. 8, Siam, Philippines, Timor, and Ternate; *javanica* (Reeve as *Achatina*), fig. 11, Java, Flores, Amboina and Ternate. Martens, *l. c.* pp. 372–377, 83 and 93.

[*Stenogyra*] *Bulimus hochstetteri*, sp. n., Zelebor, Verhandl. zool.-bot. Gesellsch. Wien, xvii. p. 806, Java.

Opeas subula (Pfr.) figured by Tryon, Am. Journ. Conch. iii. pl. 14. fig. 17.

Melaniella gracillima (Pfr.) figured by Tryon, *l. c.* fig. 16.

Macroceramus pontificus (Gould) and *gossei* (Pfr.) figured by Tryon, *l. c.* figs. 18–20.

Balea variegata, sp. n. (A. Adams), Martens, Preuss. Exped. Zool. ii. p. 31, Japan.

Balea peruviana, sp. n. (Philippi), described by Pfeiffer, Mal. Blätt. xiv.

p. 78, Peru; in external aspect like *Clausilia*, but without clausilium, and almost without folds in the aperture.

Clausilia deltostoma, var. (*Cl.*) *obesiuscula* (Lowe), Paiva, Monogr. Moll. Mad. p. 144, pl. 2. fig. 9, Madeira.

Clausilia. The following species are known from JAPAN:—*martensi* (Herklots), *buschii* (Küst.), *sieboldi* (Pfr.), *valida* (Pfr.), *aculus* (Bens.), *plicilabris*, *stimpsoni*, *proba*, and *gouldi*, sp. n. (A. Adams), the latter briefly characterized from Cumingian specimens. Martens, Preuss. Exped. Zool. ii. pp. 32–34; *Cl. aculus* figured, pl. 22. fig. 15. From CHINA:—*Cl. chinensis* (Pfr.), *cecilei* (Phil.), *pluviatilis* (Bens.), *fortunei* (Pfr.), *shanghaiensis* (Pfr.), *lorraini* (Mke.), *aculus* (Bens.), all briefly characterized, *l. c.* pp. 54–56.

Clausilia wüllerstorfi, sp. n., Zelebor, Verhandl. zool.-bot. Gesellsch. Wien, xvii. p. 806, Nicobar Islands.

Clausilia sumatrana (Martens), *l. c.* p. 379, pl. 22. fig. 17, Sumatra; *obesa*, sp. n., Martens, *l. c.* p. 380, locality unknown, probably from the Indian archipelago; *moluccensis* (Martens), pl. 22. fig. 19, Halmahera; *schwaneri*, sp. n. (Herklots), Martens, *l. c.* p. 382, Borneo; *excurrens* (Martens), pl. 22. fig. 16, Sumatra; *shanghaiensis* (Pfr.), *l. c.* pl. 22. fig. 18, Shanghai; *aculus* (Bens.), pl. 22. fig. 15, Japan and China. The palatal folds of *sumatrana*, *javana*, *excurrens*, *shanghaiensis*, and *moluccensis* are figured, p. 378.

Clausilia malleolata and *raimondii*, spp. nn., Mal. Blätt. xiv. pp. 194, 195, pl. 2. figs. 3, 4, and 5–7, mountains of Peru.

Pupa. The following American species are figured by Tryon, Am. Journ. Conch. pl. 21:—*Pupilla badia* (Adams), *blandi* (Morse), *variolosa* (Gould), *pentodon* (Say), *decora* (Gould), *rowelli* (Newc.), *californica* (Rowell), *Leucochila marginata* and *fallax* (Say), *arizonensis* (Gabb), *hordacea* (Gabb), *modica*, *armifera*, *contracta*, *rupicola*, *corticaria* (all of Say), *pellucida* (Pfr.), *Vertigo bollesiana* (Morse), *corpulenta* (Morse), *gouldi* (Binney), *milium* (Gould), *ovata* (Say), *simplex* (Gould), *ventricosa* (Morse), finally *Zoogenetes harpa* (Say).

Pupa edentula (Drap.) and *columella* (Benz). Hartmann states that the opinion first held by Dr. von Wallenberg, Mal. Blätt. 1858, v. p. 104, is correct, viz. that the former is the young state of the other; the only objection which can be made is that *edentula* has been found in many localities where *columella* has not been observed; but Hartmann accounts for this by the fact that the full-grown specimens of this species have a somewhat withered dusky appearance, and are never so glossy and dark brown as the young, and therefore will much more easily escape the eye of man—further, by the general rule that young land-snails are more lively, and expose themselves more to the open air than full-grown which prefer to remain concealed—and, lastly, by the observation of an analogous occurrence in *Balea perversa*, of which he has found many specimens not yet full-grown, but very rarely a specimen with the aperture quite perfect; he has even observed that specimens of *Balea* having only seven whorls, and wanting two more to be full-grown, already contain embryos; therefore it may be possible that also *P. edentula* produces young before it reaches that stage of age to which the name *P. columella* is applied. Œfvers. K. Vetensk. Akad. Förhandl. 1866, pp. 384–387. [We may remark that in some provinces (for example, the Prussian province Brandenburg) hundreds of specimens of *edentula* have been obtained by Dr. Reinhardt under decayed leaves, but not one *columella* has as yet been found in the same province.]

Pupa edentula (Drap.) and *muscorum* (L.) in Mantchouria, the latter also in the island of Sachalin, Schrenck, *l. c.* pp. 655–659.

Pupa (*Pupilla*) *lincolnensis*, sp. n., Cox, Proc. Zool. Soc. 1867, p. 30, Port Lincoln, South Australia.

Pupa alpestris (Alder), var. *tridentata*, near Stockholm, never mixed with normal four-toothed specimens. Hartmann, Efvers. K. Vetensk. Akad. Förhandl. 1866, p. 387.—The same species and *P. shuttleworthiana* (Carp.) are found in Mantchouria, Schrenck, *l. c.* pp. 655–659.

Vertigo tumida, sp. n., Agardh Westerlund, Mal. Blätt. xiv. p. 203, Renneby, Prov. Blekinge, Southern Sweden.

Vertigo loroisiana, sp. n., Bourguignat, Taslé, Catal. Moll. du Morbihan, Brittany.

Pupa (*Alvearella*) *wollastoni*, sp. n., Lowe, Ann. & Mag. Nat. Hist. Febr. 1867, xix. p. 81, Madeira.

Pupa (*Charadrobia*) *canicalensis*, new name for *P. wollastoni* of Paiva, not Lowe. Paiva, Monogr. Moll. Mad. p. 131, pl. 2. fig. 8, Madeira.

Pupa limensis, sp. n., Philippi, Mal. Blätt. xiv. p. 75, Lima, Peru. Allied to *P. truncatella*.

Pupa [*Strophia*] *milleri* and *P. bryanti*, spp. nn., Pfeiffer, Mal. Blätt. xiv. pp. 129, 130, Novitat. Conchol. pl. 84. figs. 6–13, and 14, 15, Bahama Islands.—*P. weinlandi* (Kurr), *martensi* (Weinland), *scalaris* (Gundlach), and *vulnerata* (Küst.) figured in Novitat. Conch. pl. 84. figs. 1, 2, 3–5, 16, 17, and 18–23. Young specimens of the first, with tooth-like folds in the aperture, are almost identical with the so-called *Helix pentodon* (Menke), *l. c.* p. 129.

Gibbulina, *Eanea*, and *Streptaxis*. See above (p. 557) among *Agnatha*.

Elasmognatha.

Hyalimax (H. & A. Adams). A new species of this genus, the type of which is *Limax perlucidus* (Q. & G.), has been found on the island of Bourbon by Maillard, *H. maillardi*. Its dissection has proved that this genus belongs to the vicinity of *Succinea*, the jaw being provided with a subquadrangular appendix; shell internal; radula like that of other herbivorous Helicidæ. Fischer, Journ. Conch. xv. pp. 218–221, pl. 10. figs. 5–9.

Succinea colbeauiana, sp. n., Malzine, Faune Malacol. Belg. p. 62, pl. 2. figs. 7, 8, Evere and Groenendal, Belgium. [= *S. pfeifferi*, var., called *fulva* by Hartmann, 1829.]

Succinea stagnalis, sp. n., Gassies, Malacol. Aquit. *l. c.* p. 14, fig. 2. Intralittoral region to the left of the Garonne, in company with *Limax arenarius* and *S. longiscata*, near ponds.

Succinea putris, including, as variety, *S. pfeifferi* (Rossm.), Mantchouria, Schrenck, *l. c.* p. 686.

Succinea obesa, sp. n., Martens, Preuss. Exped. Zool. ii. p. 387, pl. 22. fig. 21, Java.—*S. minuta*, sp. n. (Mousson), *l. c.* p. 388, Bali.

Succinea montrouzieri, sp. n., Crosse, Journ. Conch. xv. p. 433, pl. 12. fig. 5 = *australis* of Fisher and Gassies, not Férussac, New Caledonia.—*S. wrighti*, sp. n., Crosse, Journ. Conch. xv. p. 447, China.

Succinea peruviana, sp. n., Philippi, described by Pfeiffer, Mal. Blätt. xiv. p. 78, Peru.

Succinea hawkinsii, sp. n., Baird, in Lord's Naturalist in Vancouver Island, vol. ii. p. 362, Lake Osoyoos, British Columbia.

Limnophila.

Auriculidæ.

The observation made by the Recorder, that the species of this family live on muddy ground in brackish water, is fully confirmed by Blanford in his paper on the estuary mollusks of the Irawady (Journ. As. Soc. Beng. ii. p. 62). There are two exceptions from this rule, viz. the genus *Carychium*, which lives in the middle of continents, and *Pedipes*, which lives on rocks exposed to the open sea, in company with *Litorina*, as has been observed by the Recorder, Preuss. Exped. Zool. i. p. 14.

Carychium minimum (Müll.), in Mantchouria, Schrenck, *l. c.* p. 655.—*C. exiguum* (Say); shell, head of the living animal, and radula figured by Binney, Land- and Freshwater Shells N. Am. ii. p. 6.

[*Scarabus*] *Pythia ceylonica, cecillei, verreauxi, nigricans, borneensis, macgillivrayi,* and *argenvillei* figured by Pfeiffer, Novitat. Conch. pl. 83. figs. 1–17.—*Scarabus minor* (Gassies), the living animal shortly described by Ed. Marie, Journ. Conch. xv. p. 293.

Cassidula parva, sp. n., H. Adams, Proc. Zool. Soc. 1867, p. 306. pl. 19. fig. 14, Mauritius.

Plecotrema exiguum, sp. n., H. Adams, Proc. Zool. Soc. p. 307, pl. 19. fig. 15, Mauritius.—*Pl. cumingiana*, sp. n., Blanford, Journ. As. Soc. new series, ii. p. 65, pl. 2. fig. 16, delta of the Irawady.—*Pl. binneyi*, sp. n., Crosse, Journ. Conch. xv. p. 448, Péron's Peninsula, Shark's Bay, Australia.

Pedipes lirata [*-us*] (Binney), California, described and figured by Binney, Land- and Freshwater Shells N. Am. ii. p. 20.

Auricula. The absence of eyes in *Aur. judæ*, stated by Eydoux and the Recorder, is confirmed by Blanford, as well as their existence in *Auricula subula* (Q. & G.), Journ. As. Soc. ii. p. 63. [The Recorder thinks that the latter may be transferred to the genus or subgenus *Alexia* and the name *Auricula* retained for the large blind species, as *judæ* and *midæ*.] There is a complete passage from *A. judæ* into *dactylus* (Pfr.), Blanford, *l. c.* p. 64. [Also *A. turrita* (Pfr.) and *polita* (Metcalfe) may safely be regarded as individual varieties of *judæ*.]

Auricula nitidula, sp. n., Blanford, Journ. As. Soc. ii. p. 64, pl. 2. figs. 5 & 6, delta of the Irawady. Allied to *A. judæ*.

Alexia obsoleta (Pfr.), from Triest, and *A. paivana* (Pfr.), from Salvages Island, near Madeira, figured in Novitat. Conch. pl. 83. figs. 18 & 19 and 20 & 21.—*A. myosotis* (Drap.), Nova Scotia and Rhode Island, is probably introduced. Binney, *l. c.* p. 4; shell, living animal, and jaw figured.

Melampus flexuosus, sp. n., Crosse, Journ. Conch. xv. p. 448, Péron's Peninsula, Shark Bay, Australia.—*M. morosus, cinereus, sordidus,* and *cassidulus*, spp. nn., Gassies, Journ. Conch. xv. pp. 61–63, New Caledonia.—*M. obscurus* (Carp.), *bidentatus* (Say.), *flavus* (Gmel.), *coffea* (L.), *Tralia floridana* (Shuttl.), *pusilla* (Gmel.), and *cingulata* (Pfr.) are briefly described and figured by Binney, Land- and Freshwater Shells N. Am. ii. p. 19.

Leuconia sayii (Küst.) is probably not from North America. Binney, *l. c.* p. 19.

Blauneria pellucida (Pfr.), Florida; described and figured by Binney, *l. c.* p. 21.

Limnæidæ.

Limnæus stagnalis. The extremes of variation in size and form are indicated, the apical angle varying from 10° to 60°; the shortest and stoutest specimens are known from the Lake of Constance and Neuchâtel, and have been called *L. lacustris*; but they are connected by intermediate forms in some Bavarian lakes with the common *stagnalis*. Martens, Sitzungsberichte d. Gesellsch. naturforsch. Freunde in Berlin, 1867, p. 14.

Limnæa pseudostagnalis, sp. n., Malzine, Faune Malacol. Belg. p. 94, pl. 2. figs. 5, 6, Malines [appears to be a discoloured small *palustris*].—*L. linearis*, sp. n., ibid. p. 95, pl. 3. figs. 6–9, Boitsfort, Belgium [may be a very young *stagnalis*].

Limnæa truncatula (Müll.), var. *arenosa*, Gassies, Malacol. Aquit. *l. c.* p. 22, fig. 4: shell solid, of violaceous colour; in freshwater pools on the downs to the left of the Garonne.—*L. glabra* (Müll.), var. *reticulata*, Gassies, ibid. fig. 5, very slender in shape; thin and transparent, like amber, with reticulated epidermis; in the pool of Cazan in the same country.

Limnæus stagnalis, palustris, truncatulus, peregeri, ovatus, including *vulgaris* (Pfr.), and *auricularius* are found in Mantchouria. Schrenck, *l. c.* pp. 643–653.

Limnæus plicatulus (Benson) and *pervius*, sp. n., from China, and *L. javanicus* (Hasselt), with the varieties *obesus, intumescens, oliva* (Kust.), *rubiginosus* (Michelin) = *centricularius* (Parr.), *moussoni* = *succineus*, var. *javanica* of Mousson, *longulus* (Mouss.), *gibberulus, spirulatus* (Mouss.), are spread over the Indian archipelago, and described by v. Martens, Mal. Blätt. xiv. pp. 221–226.

Binney describes and figures the North-American species in Land- and Freshwater Shells, ii. pp. 22–72, and arranges them thus:—

a. Subgen. *Limnæa* proper: *stagnalis* (L.), including *jugularis* (Say), and *speciosa* (Rossm.).—*L. lepida* (Gould).

b. Subgen. *Radix*: *ampla* (Mighels), *decollata* (Mighels), and *columella* (Say).

c. Subgen. *Bulimnea*: *megasoma* (Say).

d. Subgen. *Limnophysa*: *reflexa* (Say), *attenuata* (Say), *sumassi* (Baird), *haydeni* (Lea), *palustris* (Müll.), *proxima* (Lea), *desidiosa* (Say), *emarginata* (Say), *catascopium* (Say), *caperata* (Say), *vahlii* (Beck et Möller), *pingelii* (Beck), *wormskioldii* (Mörch), *holböllii* (Beck et Möller), *adelinæ*, (Tryon), *vitrea* (Haldeman), *traskii* (Tryon), *pallida* (Adams), *bulimoides* (Lea), *solida* (Lea), *humilis* (Say), *ferruginea* (Haldem.).

e. Subgen. "*Leptolimnea*": *kirtlandiana* (Lea) and *lanceata* (Gould).

f. Subgen. *Acella*: *gracilis* (Jay), named *L. haldemani*, by Deshayes, the name *gracilis* being preoccupied for a fossil species. Journ. Conch. xv. p. 428.

Limnæa techella, sp. n., Haldeman, Am. Journ. Conch. iii. p. 194, pl. 6. fig. 4, Texas.—*Lymnæa sumassi*, sp. n., Baird, in Lord's Naturalist in Vancouver Island, ii. p. 303, Sumass Prairie, Fraser River, British Columbia.

Pompholyx effusa (Lea) is distinct from *Limnæa* in having two pairs of eyes, one at the tip [?], the other at the inner base of the tentacles. Tentacles rounded, short. Dall, Proc. Calif. Ac. Nat. Sc. 1866, pp. 264–266, with woodcut. This statement of the position of the eyes is not confirmed by Binney, *l. c.* p. 74 (woodcut of shell).

Physella berendti (Pfr.) is considered to be the type of a new genus, which ought to receive a new name. Binney, *l. c.* p. 73, with woodcut. [Has since been named *Strebelia* by Crosse and Fischer, 1868.]

Amphipeplea luzonica (Beck), Martens, Mal. Blätt. xiv. p. 219.

Physa taslei, sp. n., Bourguignat, Taslé, Catal. Moll. du Morbihan, Brittany.

Physa fontinalis, in Mantchouria, Schrenck, *l. c.* p. 654.

Physa moluccensis (Less.), from Celebes and Timor, and *Ph. philippina*, sp. n., Manilla, described by v. Martens, Mal. Blät. xiv. pp. 218 & 219.

Physa cernica, sp. n., Morelet, Journ. Conch. xv. p. 440, Mauritius.

Physa. The North-American species described and figured by Binney, (*l. c.*) are:—

a. Subgenus *Physa*: *lordi* (Baird), *gabbi* (Tryon), *gyrina* (Say), *ampullacea* (Gould), *sayii* (Tryon), *vinosa* (Gould), *ancillaria* (Say), *osculans* (Haldem.), *mexicana* (Phil.), *heterostropha* (Say), *fragilis* (Mighels), *semiplicata* (Küst.), *costata* (Newc.), *stolida* (Phil.), *virginea* (Gould), *humerosa* (Gould), *pomilia* (Conrad), *virgata* (Gould), *troostiana* (Lea), *triticea* (Lea), *concolor* (Haldem.).

b. Subgenus *Physella*: *globosa* (Haldem.).

c. Subgenus *Physodon*: *microstoma* (Haldem.).

Bulimus. The North-American species described by Binney, *l. c.* pp. 75–102, 155, are the following:—

a. Subgenus *Bulinus*: *aurantius* (Carp.), *nitens* (Phil.), *elatus* (Gould), *hypnorum* (L.), *berlandierianus* (Binney).

b. Subgenus *Isidora*: *integer* (Haldem.), *distortus* (Haldem.).

Physa lordi, sp. n., Baird, in Lord's Naturalist in Vancouver Island, vol. ii. p. 363, Lake Osoyoos, British Columbia.—*P. deformis* and *Bulinus tryoni*, spp. nn., Currier, Am. Journ. Conch. iii. p. 112, pl. 6. figs. 1 & 2, Grand Rapids, Michigan.

Planorbis carinatus, *albus*, *contortus*, and *nitidus*, in Mantchouria, Schrenck, pp. 638–643. The author states that in the last species there are not always two, but often several more lamellæ in the interior of the shell; and he defends the name *nitidus* given by Müller against the objections of English authors, although, as he says, Müller did not mention those lamellæ. [The Recorder thinks that these lamellæ are understood by the words, "strigis duabus ligamentorum instar in superna parte extimæ spiræ," Müller, Historia vermium, ii. p. 163.]

Planorbis limophilus, sp. n., Agardh Westerlund, Mal. Blätt. xiv. p. 204, Renneby, Southern Sweden. Allied to *albus*.

Planorbis bourguignati, sp. n., Moitessier, Revue Zool. p. 423, pl. 22. figs. 1–6, and *Pl. paladilhi*, sp. n., id. ibid. p. 424, pl. 22. figs. 7–14, Montpellier; the latter very near to *Pl. imbricatus* (Drap.).

Planorbis albus (Müll.), var. *nana*, Gassies, Malacol. Aquit. *l. c.* p. 21, fig. 3, ponds of the intralittoral region to the left of the Garonne.

Planorbis alexandrinus (Ehrenberg) does not belong to the subgenus *Planorbula*, Martens, Mal. Blätt. xiv. p. 20.

Planorbis indicus (Bens.) = *coromandelicus* (Fabr. apud Beck) = *exustus* (Desh.) = *circumspissus* (Morelet), British India, Ceylon, Siam; *Pl. infralineatus*, sp. n., Java; *Pl. compressus* (Hutton) = *tondanensis* of Mousson, Moll. Jav., China, British India, Sumatra, Java, Celebes, and Luzon, var. *siamensis*, from

Siam, var. *japonicus*, from Yokohama; *Pl. tondanensis* (Quoy & Gaimard), Lake of Tondano in Northern Celebes, redescribed; *Pl. aberrans*, sp. n., Shanghai; *Pl. umbilicalis* (Bens.) and *largillierti* (Dunker), both from China, redescribed; *Pl. (Segmentina) calathus* (Bens.), Yokohama, described by v. Martens, Mal. Blätt. xiv. pp. 212–218.

Planorbis. The North-American species are classified by Binney (Land- and Freshwater Moll. i. pp. 103–137) in the following manner:—

a. Subgenus *Planorbis*: *subcrenatus* (Carp.), *lentus* (Say), *tumidus* (Pfr.), *glabratus* (Say), *tumens* (Carp.), *havanensis* (Pfr.), *liebmanni* (Dunker).

b. Subgenus *Planorbella*: *campanulatus* (Say), *haldemani* (Dunker).

c. Subgenus *Adula*: *multivolvis* (Case).

d. Subgenus *Helisoma*: *ammon* (Gould), *tenuis* (Phil.), *corpulentus* (Say), *trivolvis* (Say), *truncatus* (Miles), *fragilis* (Dekay), *lautus* (H. Adams), *bicarinatus* (Say), *antrorsus* (Conrad).

e. Subgenus *Menetus*: *opercularis* (Gould), *exacutus* (Say).

f. Subgenus *Gyraulus*: *vermicularis* (Gould), *deflectus* (Say), *dilatatus* (Gould), *albus* (Müll.), *parvus* (Say), *arcticus* (Beck).

Genus *Segmentina*: *S. wheatleyi* (Lea) and *S. armigera* (Say).

Carinifex newberryi (Lea) is said to be a distinct genus between *Pompholyx* and *Physa*. Nothing but the shell is known. Binney, *l. c.* p. 74, with a woodcut.

Bulla fluviatilis (Say) and *Physa planorbula* (Dekay) are very young *Planorbis trivolvis*, *l. c.* p. 118.

Ancylus. The organization of this genus, the natural affinities of which were for a long time not clearly understood on account of the form of the shell, is nearly the same as that of *Limnæa* and other aquatic Pulmonata; but it remains in a sort of embryonic state. This is also confirmed by the sexual organs, which, on the whole, agree with those of *Limnæa*, but exhibit two striking peculiarities:—first, the absence of a distinct albuminous gland, the functions of which are performed by the walls of the hermaphroditic gland itself; and, secondly, the quite distinct orifice of the muciparous glands near to, and not in, the cloaca. Eggs are to be found during the whole summer. Their development is generally the same as that of other Pulmonata, without a striking metamorphosis. It wants, like other aquatic Pulmonata, the primordial kidney and contractile vesicle occurring in the young states of terrestrial Pulmonata. Stepanoff, Mém. Acad. Sc. St. Pétersb. x. no. 8, with 2 plates.

Ancylus isseli, sp. n., Bourguignat, Moll. Nouv. fasc. vii. 1866, p. 214, pl. 33. figs. 13–18, Rambe, near Alexandria.

Ancylus obscurus (Haldem.), *fuscus* (Adams), *elatior* (Anthony), *diaphanus* (Haldeman), *haldemani* (Bourg.), *sallei* (Bourg.), *parallelus* (Haldem.), *rivularis* (Say), *tardus* (Say), *calcarius* (Dekay), *patelloides* (Lea), *kootaniensis* (Baird), *caurinus* (Coop.), *newberryi* (Lea), *crassus* (Haldem.), *fragilis* (Tryon), *filosus* (Conrad), and *borealis* (Morse), *Acroloxus nuttallii* (Lea) and *ovalis* (Morse), *Gundlachia californica* (Rowell) and *meekiana* (Stimps.) are North-American species, briefly described and figured by Binney, *l. c.* pp. 138–150 and 156.

Ancylus kootaniensis, sp. n., Baird in Lord's Naturalist in Vancouver island, ii. p. 364, Rivers Kootanie and Spokan, British Columbia.

Thalassophila.

Amphibolidæ.

Amphibola burmana, sp. n., Blanford, Journ. As. Soc. ii. p. 66, pl. 2. figs. 7–10. Very common in the delta of the Irawady, crawling on mud, between tidemarks, in company with *Assiminea rubella* and *Plecotrema cumingianum*. Shell allied to *A. fragilis* (Q. & G.), animal considerably differing from the figure given by Quoy & Gaimard. Specimens of the same species from Malacca and Bombay were seen by the author.

Siphonariidæ.

Siphonaria sipho (Sow.), including as varieties *exigua* (Sow.), and *acuta*, *albicans*, *punctata*, *zelandica*, and *plicata* (Q. & G.) is described from specimens from Hakodate by Schrenck, *l. c.* pp. 306–308.

Siphonaria alternata (Say), from Florida, *æquilirata* (Carp.), *amara* (Reeve), and *leeanium* (Phil.), from California and Mazatlan, briefly described, and the first three figured by Binney, Land- and Freshwater Moll. of N. Amer. pt. 1. pp. 153–154.

PULMONATA OPERCULATA.

Cyclotacea.

The subfamily *Cyclotacea*, comprising *Cyclotus* and *Cyclophorus*, is characterized by the round multispiral operculum with central nucleus, and the lobed, but not pectinated, laminæ of the radula. It is chiefly represented in Eastern Asia; and the genera and subgenera occurring in the Asiatic fauna are arranged in a double manner:—first, according to the aperture of the shell being simple or expanded or provided with wing-like prolongations; secondly, according to the structure of the operculum. The radula of *Cyclophorus punctatus*, *tuba*, *borneensis*, and *Cyclotus subflammulatus* figured in woodcuts. Martens, Preuss. Exped. Zool. ii. pp. 108–110.

Opisthoporus euryomphalus (Pfr.) = *Cyclotus latistrigus* (Martens), Borneo, Martens, *l. c.* pl. 1. fig. 6; *corniculum* (Mouss. as *Cyclostoma*) = *javanus* (Pfr.), *l. c.* p. 112; *sumatranus* (Martens), *l. c.* pl. 1. fig. 4.

Pterocyclos sumatranus (Martens), *l. c.* p. 115, pl. 1. fig. 5.

Cœlopoma, g. n., A. Adams. Peristome simple; operculum elevated, conical, hollow, with a horny spiral lamina. *C. japonicum*, sp. n., Tsusima, Japan. A. Adams, Proc. Zool. Soc. 1867, p. 313, pl. 19. fig. 29.

Cyclotus. The Asiatic species have the edge of the operculum rather thick, and provided with a circular furrow. They are arranged by the Recorder in the following groups (Preuss. Exped. pp. 116–129):—

1. Pterocycloidei, aperture as in *Pterocyclos*: *C. batjanensis* (Pfr.), pl. 1. fig. 1, *bernsteini* (Martens), p. 117, Obi Islands; *pruinosus* (Martens), fig. 2, Ternate; *fasciatus* (Martens), fig. 3, Maros, Celebes.
2. Marmorati: *guttatus* (Pfr.) = *subflammulatus* (Pfr.) = *obesus* (Martens), *l. c.* fig. 7, variety 7 *b*, Moluccas; *reticulatus* (Martens), fig. 3, Flores and Timor; *amboinensis* (Pfr.), figs. 4 & 5, Ceram, Amboina, and Buru; *succinctus* (Martens), figs. 6 & 7, Timor; *fulminulatus* (Martens), fig. 1, and *longipilus* (Martens), fig. 9, both from Maros, Celebes.

3. Suturales: *C. plebejus* and *pusillus* (Sow.), Philippines; *C. discoideus* (Sow.)=*opalinus* (Mouss.), Java; *ptychoraphe* (Martens), *l. c.* pl. 2. fig. 11, Borneo; *plicosus* (Martens), figs 13 & 14, and *parvulus* (Martens), fig. 12, both from the Moluccas; *C. campanulatus* (Martens), *l. c.* p. 11, Japan.

4. Liratuli, perhaps identical with *Japonia* (A. Gould) and *Jerdonia* (Blanford): *C. subdiscoideus* (Sow.), India; *triliratus* (Pfr.), Borneo; *liratulus* (Martens), *l. c.* pl. 2. fig. 15, *bicarinatus* (Martens), fig. 16, and *carinulatus* (Martens), fig. 17, all three from the Moluccas. Preuss. Exped. Zool. ii. pp. 116–130 and p. 12.

Cyclotus gassiesianus, sp. n., Crosse, Journ. Conch. xv. p. 206, pl. 6. fig. 5, Cochinchina.—*Cyclotus wüllerstorfianus*, sp. n., Zelebor, Verhandl. zool.-bot. Gesellsch. Wien, p. 807, Nicobar Islands.

Cyclotus fischeri, sp. n., Hidalgo, Journ. Conch. xv. p. 305, pl. 8. fig. 3. Ecuador.

Cyclophorus. The species of Eastern Asia are arranged in the following groups by Martens, Preuss. Exped. Zool. ii. pp. 130–142:—

1. Pterocycloidei, aperture as in *Pterocyclos*: *brevis* (Martyn) and *confluens* (Pfr.).
2. Cyclotoidei, edge of the aperture straight: *semisulcatus* (Sow.).
3. Ampli: *eximius* (Mouss.), rediscovered in Sumatra; *rafflesii*, Brod.=*oculus capri* (Wood and Pfeiffer, not Linné), Java.
4. Tubæformes: *tuba* (Sow.), *l. c.* pl. 3. figs. 2–4, Sumatra; *aquila* (Sow.), with several varieties, Malacca and adjacent islands; *bankanus*, sp. n., Martens, *l. c.* p. 135; *borneensis* (Metcalfe), figs. 5, 6, Western Borneo and Singapore; *perdix* (Brod.), with several varieties, including *zollingeri* (Mouss.), common throughout Java and Sumatra, aperture white or yellow in the same localities.
5. Elevati: *C. punctatus* (Gratel.), Canton, *l. c.* p. 39; *exaltatus* (Pfr.), Hongkong, p. 39, the living animal figured, pl. 19. fig. 8; *C. herklotsi* (Martens), Nangasaki, *l. c.* p. 13, pl. 3. fig. 1; *lituus* (Martyn)=*volvulus* (Pfr. & Reeve, not O. Fr. Müller), Siam, p. 64, pl. 2. fig. 7; *cantori* (Bens.), *tæniatus* (Pfr.), *tenebricosus* (Ad. & Reeve).
6. Pyramidati: *turbo* (Chemn.), *atramentarius* (Sow.), *nigricans* (Pfr. as *Leptopoma*), *l. c.* p. 139, pl. 4. fig. 3, Northern Celebes.
7. Liratuli=gen. *Craspedotropis* (Blanf.): *barbatus* (Pfr.), Borneo; *ciliferus* (Mouss.), Java; *garreli* (Souleyet)=*gaymansi* (Martens), *l. c.* pl. 2. fig. 10, Sumatra; *bellulus* (Martens), fig. 18, Borneo; *trochulus* (Mouss.), Java; *ciliocinctus* (Martens), pl. 2. fig. 2, Java; *leucorrhaphe* (Martens), pl. 4. fig. 1, Halmahera.

Cyclophorus annamiticus, sp. n., Crosse, Journ. Conch. xv. p. 204, pl. 6. fig. 6, Cochinchina. Similar to *Pterocyclos brevis* (Martyn).

Leptopoma. There is no essential difference between this genus and *Cyclophorus*, and it may be regarded rather as a subgenus of the latter. The appendix on the foot described by Adams for his new genus *Dermatocera* has not been found in any species observed alive by the Recorder. The genus may be provisionally retained for the white-coloured globose species, common in the eastern half of the Indian archipelago, where the other members of *Cyclophorus* are very scarcely represented. *L. vitreum* (Less.) is spread in several varieties through the Indian archipelago:—*a. normale*, and *β. cinctellum*

(Pfr.), in Ternate, Halmahera, Batjan; γ. *latilabre*, δ. *intermedium*, and ε. *minus*, in Ceram and Amboina. Martens, Preuss. Exped. Zool. ii. pp. 143–146, pl. 4. figs. 2, 4, 5, 6, and 7.—*L. moussoni* (Martens), pl. 2. fig. 10, Southern Celebes and Timor.—*L. manadense* (Pfr.), fig 8, Northern Celebes.—A second group is formed by the conical angulated species, and almost peculiar to the Philippines; but one species, *undatum* (Metcalfe), occurs in Western Borneo. Ibid. pp. 143–150.

Alycæus longituba (Martens), *l. c.* p. 151, pl. 4. fig. 8, Sumatra; *japonicus* (Martens), *l. c.* pl. 2. figs. 20, 21, Yokohama. In some species, as in *A. spiracellum* (Adams), the operculum is thick and shelly, with marginal groove, in others, as *A. jagori* (Martens), thin and horny. In the latter the spire is more elevated, and they may be named *Alycæi veri*, whereas those with shelly operculum may form a subgenus, *Charax* (Bens.). Martens, *l. c.* pp. 150–153.

Pupinea.

Pupinella ceramica (Martens), *l. c.* pl. 4. fig. 9, Ceram.

Pupina (*Rhegistoma*) *solitaria* (Martens), *l. c.* pl. 4. fig. 10, Moluccas; *P. herklotsi* (Junghuhn), Java, *l. c.* p. 156.

Pupina (*Callia*) *amboinensis* (Martens), *l. c.* pl. 4. fig. 13; *P. wallacei* (Pfr.), *l. c.* fig. 12, Ceram, Amboina, and Buru.

Diplommatinacea.

Diplommatina mariei, sp. n., Crosse, Journ. Conch. xv. p. 179, pl. 7. fig. 6, New Caledonia.

Diplommatina huttoni (Pfr.) is found near the Maracas Waterfall, island of Trinidad; this is the first instance of a species of this genus having been found in America. Guppy, Proceed. Scientif. Assoc. Trinidad, ii. p. 136, and Ann. & Mag. Nat. Hist. xx. p. 95. [This species lives in British India; and if that found in Trinidad is really the same, it is probably imported.]

Diplommatina (*Diancta*) *constricta* (Martens), *l. c.* p. 164, pl. 4. fig. 15, Ternate.—*D. paradoxa*, sp. n., Crosse, Journ. Conch. xv. p. 449, locality unknown, "sectioni *Dianctæ* vicina, at non omnino congrua." [The Recorder begs to state, from the examination of a specimen, that H. Adams's *Dipl. martensi* (Zool. Record, iii. p. 203) really belongs to *Dianeta*, the characteristic stricture being half concealed by the aperture, and not represented in the figure.]

Pupoidea (Pease) = *Palaina* (Semper), Am. Journ. Conch. iii. p. 104. [The generic name *Palaina* has been given, but without any diagnosis, to two known species by Semper, in Journ. Conch. xiii. 1865, July, p. 292; whilst *Pupoidea* is proposed for a new species (which is described and figured) by Pease in Am. Journ. Conch. i. 1865, October, p. 290, who also omits to define the generic characters. These names are, indeed, identical with *Pupoides*, proposed by Arango, Repert. Fis.-Nat. Cub. 1865, July, p. 110, for *Pupa fallax* (Say), which, again, must yield to the prior *Leucochila* (Martens, in Albers's Helic. 1860).]

Paxillus rubicundus. Martens, Preuss. Exped. Zool. ii. p. 164, pl. 4. fig. 17, Borneo.

Opisthostoma fairbanki, operculum with whorls almost imperceptible,

noticed by W. T. Blanford, Journ. Conch. xv. p. 98, and Ann. & Mag. Nat. Hist. May 1867, xix. p. 306.

Cyclostomea.

Cyclostomus (*Tropidophora*) *mauritianus*, sp. n., H. Adams, Proc. Zool. Soc. 1867, p. 306, pl. 19. fig. 10, Mauritius.

Cyclostomus scaber, sp. n., H. Adams, *l. c.* pl. 19. fig. 11, Mauritius.

Ctenopoma bryanti, sp. n., Pfeiffer, Mal. Blätt. xiv. p. 130, Bahama Islands.—*Ct. rugulatum* (Pfr.) found in Florida, and figured by Binney, Land- & Freshw. Shells N. Am. iii. p. 97.

Choanopoma humboldtianum, sp. n., Pfeiffer, Mal. Blätt. xiv. p. 150, Cuba.

Chondropoma ravenèi, sp. n., Pfeiffer, *l. c.* p. 166, Inagua, Bahama Islands.—*Cyclostoma* (*Chondropoma*) *cirratum* (Wright), Pfeiffer, *l. c.* p. 210, Cuba.—*Chondr. dentatum* (Say), Florida, Binney, Land- & Freshw. Moll. N. Am. iii. p. 96, with woodcuts.

Pomatias. Eight species are found in Southern France, one being new, *P. arriense*. Dentition and other anatomical details described. St. Simon, On *Pomatias*: Toulouse, 1867, 8vo.

Pomatias letourneuxi, sp. n., Bourguignat, Moll. Nouv. fasc. vii. p. 216, pl. 33. figs. 22, 23, Roknia, province of Constantine, Algeria.

Omphalotropis costellata and *picturata*, spp. nn., H. Adams, Proc. Zool. Soc. 1867, p. 306, pl. 19. figs. 12 and 13, Pouce Mountain, Island of Mauritius.

Omphalotropis ceramensis (Pfr.) = *bicarinata*, Martens, *l. c.* p. 160, pl. 4. fig. 11; *O. rudis*, sp. n., Martens, *l. c.* p. 161, pl. 4. fig. 14, Ceram.

Realia costata and *elongata*, spp. nn., Pease, Am. Journ. Conch. iii. p. 225, Tahea and Raiatea Islands, Polynesia.

[*Realia*] *Hydrocena coturnix*, sp. n., Crosse, Journ. Conch. xv. p. 181, pl. 7. fig. 5, New Caledonia, in woods.

Hydrocena pygmæa, sp. n., Gassies, Journ. Conch. xv. p. 63, Island Art, New Caledonia.

Hydrocena scherzeri, sp. n., Zelebor, Verhandl. zool.-bot. Gesellsch. Wien, xvii. p. 807, Nicobar Islands.

Truncatellidæ.

Truncatella truncatula (Drap.) is placed among the marine mollusks as type of a distinct family, *Truncatellidæ*, by Jeffreys, Brit. Conch. iv. pp. 83–87.

Truncatella caribæensis (Sow.), *bilabiata* (Pfr.), *pulchella* (Pfr.), and *subcylindrica* (Pult., Pfr.), all West-Indian, occurring also in Florida, and *T. californica* (Pfr.), are briefly described and figured by Binney, Land- and Freshwater Shells N. Am. iii. pp. 97–100.

Truncatella princeps (Dohrn), Pfr. Novitat. Conch. pl. 76. figs. 10, 11.

Truncatella tatarica, sp. n., Schrenck, *l. c.* p. 310, pl. 14. figs. 10–13, Bay de Castries, in Mantschuria.—*Truncatella scalarina*, sp. n., Cox, Proc. Zool. Soc. p. 40, Port Lincoln, South Australia.—*Truncatella pacifica*, sp. n., Pease, Am. Journ. Conch. iii. p. 230, pl. 15. fig. 27, Oualou Island.

Taheitea pallida, sp. n., Pease, *l. c.* p. 229, Tahiti and Huaheine Islands.

Assimineæ.

Assiminea gallica, sp. n., Paladilhe, Revue et Mag. Zool. xix. p. 40, pl. 20. figs. 1–6, in salt springs in the Départements de l'Ain et du Jura.

Assiminea rubella, sp. n., Blanford, Journ. As. Soc. ii. p. 56, pl. 2. figs. 11,

12, Port Dalhousie, delta of the Irawady, on mud between tidemarks [probably = *Ass. miniata* of the Recorder, Ann. & Mag. Nat. Hist. 1866, xvii. p. 204.]—The same species, *Assiminea rotunda*, sp. n. (Fairbank), *cornea*, *subconica*, *marginata*, spp. nn., are described and figured by Blanford, Ann. & Mag. Nat. Hist. June 1867, xix. pp. 381–386, India. The genus *Optediceros* is identical with *Assiminea*.

Helicinidæ.

Helicina. The dissection of several specimens of *Helicina titanica* (Poey) by C. Isenkrahe proves that this genus agrees, with regard to the radula, the presence of a peculiar organ adhering to the stomach, and the position of the nervous ganglions, more with *Neritina* than with *Cyclostoma*. Therefore the author is inclined to remove the *Helicinacea* from the other operculated *Pulmonata*, uniting them with the *Trochidæ* and *Neritidæ* under Troschel's name *Rhipidoglossa*. The separation of the sexes and the absorption of the inner septa between the whorls is confirmed by the author's investigations. Isenkrahe, *Helicinæ titanicæ* Anatome; or in Troschel's Arch. f. Naturgeschichte, xxxiii. pp. 50–72, pl. 1.

Helicina zelebori, sp. n., Pfeiffer, and *H. dunkeri*, sp. n., Zelebor, Verhandl. zool.-bot. Gesellsch. Wien, xvii. pp. 807, 808, Nicobar Islands.

Helicina oxytropis (Gray) = *jagori* (Pfr.), Martens, *l. c.* p. 166, pl. 4. fig. 20, Java?, Celebes, Timor, and Amboina; *H. sculpta* (Martens), fig. 17, Timor; *H. suturalis* (Martens), fig. 18, Amboina, Ceram, and Buru; *H. albocincta* (Hombron & Jacquinot?), *l. c.* fig. 21, Banda Islands; *H. biconica*, sp. n., Mousson in collectione, Martens, *l. c.* p. 169, Java; *H. idæ* (Pfr.) = *zoæ* (Pfr.), *l. c.* pl. 4. fig. 19, Amboina; *H. borneensis* (Martens), *l. c.* p. 171, Borneo; *H. parva* (Sow.) = *pulla* (Martens), *l. c.* fig. 22, Batjan and Halmahera.

Helicina discoidea, sp. n., *oceanica*, sp. n., and *maugeriæ* (Gray), var. *rubicunda*, Pease, Am. Journ. Conch. iii. pp. 226, 227, Tahaa, Kingsmill, and Raiatea islands, Polynesia.—*H. flavescens* and *zigzag*, spp. nn., Pease, ibid. pp. 228, 229, pl. 15. figs. 25 and 26, Mangaia and Oualou islands.

Helicina rawsoni and *bryanti*, spp. nn., Pfeiffer, Journ. Conch. xiv. p. 165, Inagua, Bahama Islands.

Helicina (subgen. *Oligyra*) *orbiculata* (Say), *hanleyana* (Pfr.), *chrysochela* (Binney), and *subglobulosa* (Poey) are briefly described and figured, and the head of the living animal and the lingual dentition of the first and another, undetermined species figured by Binney, Land- and Freshwater Shells of N. Am. iii. pp. 107–112 and 116.

Helicina (*Perenna*) *lamellosa*, Guppy, Ann. & Mag. Nat. Hist. xix. p. 260, pl. 10. fig. 4, and Proceed. Scientif. Assoc. Trinidad, ii. p. 136, Cotoras Islets, Trinidad. The subgenus *Perenna* is new, and distinguished by the concentric striæ of the operculum and the spiral ridges of the shell. *H. lirata* (Pfr.) is included in it.

SOLENOCONCHÆ.

Dentalium octogonum (Lam.), Hakodate. Schrenck, *l. c.* p. 381.

Siphonodentalium lofotense, *affine*, *subfusiforme*, and *pentagonum*, spp. nn., Sars, from the Lofoten Islands, the last two also in the Bay of Christiania. The living animals are described, and some particulars concerning their ana-

tomy given. In *S. pentagonum* and *lofotense* there has been observed a single cylindrical thread or tentacle at the terminal disk of the foot; as it is very difficult to see, it may have been overlooked in the others. The hinder aperture of the shell is entire in all these four species, whilst it is notched in *S. vitreum*; the hindermost part of the shell is pentagonal and ribbed longitudidinally in *pentagonum*. Sars, Vidensk. Selsk. Förhandl. 1864, p. 16–35, pls. 6 and 7.

Siphonodentalium (Sars). The characters of this genus are revised by G. Jeffreys in his fourth dredging-report (pp. 3 and 4); the posterior orifice exhibits two slight notches on each side, and the foot is ordinarily vermiform and pointed, expanding only in a flower-like shape when the animal uses it as a fulcrum, somewhat similarly to the foot of *Leda* and *Nucula*. To this genus are to be referred, according to the same author, also *Dentalium quinquangulare* (Forbes) from the Ægean Sea and Portugal, identical with *D. pentagonum* (Sars) from Norway, and the tertiary *D. bicarinatum* (Desh.).

Dischides is a new genus suggested incidentally by J. Gwyn Jeffreys, *l. c.*, for *Dentalium bifissum* (S. Wood.), dredged in a living state off Gibraltar by Mr. M'Andrew. No generic characters are given.

Cadulus, a genus proposed by Philippi, 1844, for *Dentalium orulum* on account of the form of the shell, is reëstablished by J. Gwyn Jeffreys, *l. c.* pp. 3–5; it differs from *Siphonodentalium* (Sars) by the shell being quite smooth, transparent, and lustrous, tumid in the middle or anterior portion, and its mouth encircled by a narrow rim. It contains, according to him, the following species:—*Dentalium gadus* of Montagu; an allied species, *D. claratum* (Gould), from the China Sea; another from Mindanao; *Siphonodentalium subfusiforme* of Sars, distinguished by two slight indentations of the posterior orifice, and dredged by Gwyn Jeffreys at Unst in 80–90 fathoms; finally the tertiary fossil *D. coarctatum* (Lam.). [This genus is evidently same as *Helonyx*, Stimps. 1865, and *Gadila*, Gray, 1847, mentioned in Zool. Record, iii. p. 205.]

CONCHIFERA.

INCLUSA, Cuv. (*Pholadacea*, Ad.).

Pholadidæ.

Conrad's new catalogue of recent Mollusca, order *Pholadacea*, comprises the families *Pholadidæ*, *Gastrochænidæ*, and *Teredidæ*, with 22 genera and 140 species, the synonymy embracing several hundred names; the nomenclature and synonymy are nearly the same as those in the author's monograph of the *Pholadacea*, issued in 1862; the species published since that time are included in the present edition. The whole forms an appendix to the Am. Journ. Conch. vol. iii. No. 3, with separate pagination.

Pholas parva (Penn.), from the coasts of Algeria and Spain; the synonymes *Ph. ligamentina* and *dactyloides* (Lam.) are rather doubtful. Weinkauff Conchyl. d. Mittelmeers, i. p. 9.

Pholas crispata (L.), Island of Sachalin, east and west coast, Schrenck, Moll. Amurl. p. 595.

Xylophaga dorsalis (Turt.), as yet found only in two instances in the Mediterranean. Weinkauff, i. p. 6.

Martesia fluminalis, sp. n., Blanford, Journ. As. Soc. new ser. ii. p. 67, pl. 3. figs. 1–3, boring in soft argillaceous sandstone, in creeks of the delta of the Irawady, far from the sea, where the water is brackish.

Teredo. The following species are acknowledged by Weinkauff, i. pp. 3–5, as Mediterranean:—*T. norvegica* (Spengl.), *pedicellata* (Quatref.), *philippii* (Gray) = *bipalmulata* of Chiaje and Philippi, and, on the authority of Deshayes, also *T. divaricata*. *Septaria mediterranea* (Risso) is received among the Mediterranean living shells on the authority of Risso, Matheron, Jeffreys, and Hanley.

Gastrochænidæ.

Gastrochæna folini, sp. n. (Desh.), and *G. distincta*, sp. n., Folin, Méléagrinicoles, pp. 11–12, pl. 1. figs. 6–16, on pearl-oysters from Panama, together with *G. denticulata* (Desh.), which is also figured.

Solenidæ.

The catalogue of this family, published by T. A. Conrad as appendix to the Am. Journ. Conch. vol. iii. No. 3, comprises 12 genera and 126 species.

Solen vagina (L.). This Linnean name is retained for the European species, in opposition to Hanley, by Weinkauff, i. p. 11.

Solen corneus (Lam.), Hakodate; and *S. krusensternii*, sp. n., Hakodate and Sachalin. Schrenck, *l. c.* p. 594, pl. 25. figs. 9–12.

Siliqua californica, sp. n., Conrad, Am. Journ. Conch. iii. p. 193, Bodegas, California.—*Aulus costatus* (Say) = *pulchellus* (Dunker), Sachalin and Hakodate. Schrenck, Moll. Amurl. p. 590.

Saxicavidæ.

Saxicava arctica (L.). Only this species is found in the Mediterranean, but not the varieties or species (whatever they may be) called *L. rugosa* and *L. pholadis* (L.): Weinkauff, i. p. 21. The same species in the Gulf of Tartary and Northern Japan: Schrenck, *l. c.* p. 556.

Saxicava initialis and *S. acuta*, spp. nn., Folin, Méléagrinicoles, pp. 13–14, pl. 2. figs. 4–6, on pearl-oysters from Panama.

Panopœa glycymeris (Born as *Mya*) = *aldrovandi* (Menard), found hitherto living in the Mediterranean on one spot only of the coast of Sicily, near Taormina: Weinkauff, i. p. 23. [The locality Tarent, mentioned by Weinkauff from Salis, is very doubtful, as is evident from Salis's notes.]

Myidæ.

Mya truncata (L.), Sachalin, not common.—*M. arenaria* (L.), Sachalin, common, also subfossil, Schrenck, *l. c.* pp. 586–589. The latter species is = *M. japanica* (Jay), in the Bay of Yedo. Lischke, Mal. Blätt. xiv. p. 175.

Corbulidæ.

Corbula venusta (Gould), pl. 25. fig. 4, Hakodate; *C. amurensis* (Schrenck), figs. 5, 6, mouth of the Amur and Bay de Castries. Schrenck, *l. c.* pp. 583–586. —*C. erythrodon* (Lam.), Bay of Yedo. Lischke, Mal. Blätt. xiv. p. 175.

Corbula luteola, sp. n., Carpenter, Proc. Calif. Acad. Nat. Sc. 1866, p. 207, San Diego, San Pedro, California.

Corbulomya mediterranea (Costa). Its identity with *C. rosea* (Brown) and *physoides* (Desh.) is disproved, and the former regarded as a mere variety of *Corbula gibba*; the other is not a *Corbula*, perhaps a *Lepton* or *Poromya*, being punctated like the former genus. Weinkauff, i. pp. 24–27.

Sphenia perversa, sp. n., Blanford, Journ. As. Soc. ii. p. 68, pl. 3. figs. 4–6, Delta of the Irawady, boring in stone, at a considerable distance from the sea, in company with *Martesia fluminalis*.

Sphenia pacificensis [*-fica*], sp. n., Folin, Méléagrinicoles, p. 15, pl. 2. figs. 10 & 11, on pearl-oysters from Panama, together with *Sph. fragilis* (Carp.), which is here figured for the first time, figs. 7–10.

Anatinidæ.

Lyonsia saxicola, sp. n., Baird, in Lord's Naturalist in Vancouver Island, vol. ii. p. 366, Esquimalt Harbour.

Alicia, g. n. Near to *Periploma* and *Lyonsia*, differs from both by the cartilage not being supported by projecting spoon-shaped processes, and by its being perpendicular to the umbones. *A. angustata* and *elegantula*, spp. nn., Port Jackson. Angas, Proc. Zool. Soc. 1867, p. 908, pl. 44. figs. 1 & 2.

Thracia. The Mediterranean species are:—*Thr. pubescens* (Pult.), *Thr. papyracea* (Poli)=*phaseolina* (Lam.), *Thr. corbuloides* (Desh.), *Thr. distorta* (Montagu)=*Rupellaria concentrica* (Fleurian). The occurrence of *Thr. prætenuis* (Pult.) in the Mediterranean is doubtful; *Thr. pholadomya* (Forbes) not yet recognized. Weinkauff, Conchyl. d. Mittelmeer's, i. pp. 36–40.

Thracia modesta, sp. n., Angas, *l. c.* p. 908, pl. 44. fig. 3, Port Jackson.

[*Thetis*] *Poromya*. The identity of the Ægean *P. anatinoides* (Forbes) and the fossil *P. granulata* (Nyst) with the Norwegian *Embla korenii* (Lovén) and the Algerian *Corbula vitrea* (Desh.) is a matter of doubt. Weinkauff, i. pp. 30, 31.

Neæra. Three species occur in the Mediterranean:—*cuspidata* (Olivi)=*brevirostris* (Brown), *rostrata* (Spengl.)=*attenuata* (Forbes), and *costellata* (Desh.)=*rostrato-costellata* (Acton). *N. abbreviata* (Forbes), on the other hand, is a northern species. Weinkauff, i. pp. 27–30.

Plectodon, g. n. Allied to *Neæra*, and having the aspect of *Theora*; but the dorsal margin is twisting in, and ascends the umbo in a very loose spiral. "Testa tenuis, scaber [*-ra*], rostrata, haud inflata; margo dorsalis sub umbones [*-ibus*] intus nexa [*-us*], dentem cardinalem formans; dentes laterales longi, laminati; cartilago [*in*] fossa minuta, sub umbones celata, dente [*-i*] laterali postico contigua sita; sinus pallii parvus." *Pl. scaber*, sp. n., Carpenter, Proc. Calif. Acad. Nat. Sc. 1866, p. 207, Catalina Island, California.

Pandora oblonga of Philippi (? Sowerby), *P. pinna* (Montagu)=*obtusa*

(Sow.) and *P. inæquivalvis* (L.)=*rostrata* of most authors=*flexuosa* of Philippi, but not of Sowerby, are not identical as believed by Jeffreys. Weinkauff, i. 31–34.

CARDIACEA, Cuv. (*Veneracea*, Ad.).

Mactridæ.

The catalogue of this family, published by T. A. Conrad as appendix to the American Journal of Conchology, vol. iii. no. 3, comprises 21 genera and 221 species.

Mactra stultorum (L.), its varieties described; *M. corallina* (Linné)=*inflata* (Bronn) regarded as a variety of it; *M. triangula* (Renier) to be kept distinct from the Atlantic *subtruncata* (Mont.); *M. solida* (L.) disproved as Mediterranean species. Weinkauff, i. pp. 44–49.

Mactra sulcataria (Desh.), from Hakodate and Sachalin, Schrenck, *l. c.* 570, pl. 23. figs. 1, 2; from the Bay of Yedo, Lischke, Mal. Blätt. xiv. p. 174, and Martens, Preuss. Exped. i. p. 141.—*M. veneriformis* (Desh.), Bay of Yedo, Lischke, *l. c.*

[*Mactra*] *Harvella pacifica*, sp. n., Conrad, Am. Journ. Conch. iii. p. 192, Panama.

Mactra (*Spisula*) *grayana* (Schrenck)=*grandis* (Desh.)=*similis* (Gray)=*ovalis* (Gould)=*ponderosa* (Phil.), and *M.* (*Sp.*) *sachalinensis* (Schrenck), pl. 23. figs. 3–7=*lüdorfii* (Dunker); both from Sachalin, Schrenck, *l. c.* pp. 572–578, & 894.

Spisula cretacea and *producta*, spp. nn., Angas, Proc. Zool. Soc. pp. 909, 910, pl. 44. figs. 6 & 7, Port Jackson.—*Spisula catilliformis* and *dolabriformis*, spp. nn., Conrad, Am. Journ. Conch. iii. p. 193, Panama.

Lutraria maxima (Midd.), from the Bay of Yedo. Lischke, Mal. Blätt. xiv. p. 175; and Martens, Preuss. Exped. i. p. 140.

Tellinidæ.

Psammobia decora (Hinds), Hakodate. Schrenck, *l. c.* p. 568, pl. 22. figs. 8, 9.

Psammobia pazi, sp. n., Hidalgo, Journ. Conch. xv. p. 306, pl. 8. fig. 4, locality unknown.

Tellina. This genus is treated of by Sowerby in the late Mr. Reeve's Conchologia Iconica, parts 258 & 259, 262–265. New species are:—*T. substrigosa*, *melo*, Malaga; *inflata*, *caseus*, *arcuata*, *occidentalis* (Mörch), West Indies; *tumidia*, Jamaica; *macandrei*, Madeira; *longirostrata*, *malaccana*, Malacca; *corbis*, *tenuistriata*, *gracilis*, Australia; *excavata*, *inæquivalvis*, Australia.

Tellina baltica (L.). The Mediterranean specimens are of small size, and resemble the fossil specimen figured in S. Wood's 'Crag Mollusca.' *T. planata* (L.) is obtained rarely alive by means of the dredge, because it lives in very shallow water, where the dredge cannot be used. *T. incarnata* (L.)=*depressa* (Gmel.)=*squalida* (Pult.); a pale variety is *T. daniliana* (Brusina). *T. exigua* (Poli)=*tenuis* (Donovan). *T. fabula* (Gronov.), the Mediterranean specimens are narrower in shape than those from the North Sea. *T. distorta* (Poli) is a distinct species. *T. donacina* (L.), one of its varieties is Payraudeau's *T. lanticyi*, whilst *T. oudardi* (Payr.)=*distorta* of Hanley, not

Poli, is regarded as a variety of *T. pulchella* (Lam.). *T. serrata* (Renier) agrees rather with fig. 257 than 256 of Sowerby's Thesaurus. *T. punicea* (Born) and *Strigilla carnaria* (L.) are not Mediterranean. Weinkauff, i. pp. 73–90.

Tellina rosea (Spengler), Schrenck, pl. 22. fig. 1, Hakodate; *T. venulosa* (Schrenck), figs. 2–5, Bay de Castries and Hakodate; *T. bruguieri* (Hanley), figs. 6, 7, Hakodate; *T. nasuta* (Conrad), Sachalin and Yesso; *T. lata* (Gmel.), Gulf of Tartary; *T. lutea* (Gray)=*alternidentata* (Brod. et Sow.), Sachalin; *T. edentula* (Brod. et Sow.), Sachalin; *T. solidula* (Pult.), Hakodate. Schrenck, *l. c.* pp. 555–567.

Macoma fusca (Say) figured by Packard, Mem. Bost. Soc. Hist. Nat. i. pl. 7. fig. 2, Labrador.

Macoma indentata, sp. n., Carpenter, Proc. Calif. Acad. Nat. Sc. 1866, p. 208, San Pedro, California.

Œdalina. This name is substituted by Carpenter for *Œdalia* of the same author, Brit. Assoc. Rep. 1864 (Record, vol. iii. p. 288), the last name being preoccupied. The subgenus called by the author *Cooperella* is characterized as follows:—Cartilagine fossa semiinterna, ligamento externo contigua sita; dentibus cardinalibus laminatis, haud bifidis seu uno bifido. *Cooperella scintillæformis*, sp. n., San Diego, San Pedro, California. Carpenter, Proc. Calif. Acad. Nat. Sc. 1866, p. 208.

Donax trunculus (L.) and *venusta* [*-us*] (Poli). Very young specimens of both are not truncated on the hinder side, but rounded, whilst young specimens of *D. semistriata* [*-us*] (Poli) have the same shape as adult ones. The identity of *D. anatinus* (Forbes & Hanley, not Lamarck) with *venustus* (Poli) is defended. Weinkauff, i. pp. 61–66. *D. polita* [*-us*], Poli, Gmelin's errors concerning this species pointed out, ibid. p. 67; *D. denticulata* [*-us*] (L.) is not Mediterranean, ibid. p. 68.

Donax atlantica [*-us*], sp. n., Hidalgo=*vittata* of Lamarck and Jeffreys, not Da Costa=*anatinus* of Sowerby and M'Andrew, not Lamarck=*venusta* of Reeve, not Poli, oceanic coast of Spain. Gonzalez Hidalgo, Journ. Conch. xv. p. 139.

Donax (*Latona*) *granosus* (Zelebor), Frauenfeld, Reise Novar. Moll. pl. 2. fig. 27.

Galatea truncata, sp. n., Dunker, Mal. Blätt. xiv. p. 236, pl. 3. figs. 1–3, Guinea.

Fischeria curta, sp. n., Dunker, *l. c.* p. 207, pl. 3. figs. 4–6, West Africa.

Scrobicularia. The two forms *plana* (Da Costa), in the North Sea, and *piperata* (Gmel.), in the Mediterranean, cannot be kept as distinct species; *Sc. fabula* (Brusina) and *trigona* (Sandri) are founded on young specimens of the same species. Weinkauff, i. pp. 57–59.

Syndosmya segmentum (Costa). A Mediterranean shell, the varieties of which (one from the oceanic coasts of France) are described by P. Fischer, Journ. Conch. xv. pp. 295–297, pl. 9. fig. 2.

Syndosmya. The Mediterranean species are:—*S. alba* (Wood), with four varieties, including *profundissima* (Forbes); *S. angulosa* (Renier)=*prismatica* (Mont. and all other authors); *S. nitida* (Müll.)=*intermedia* (Thomps.); *S. tenuis* (Mont.); *S. orata* (Phil.)=*Erycina bielziana* (Brusina). Weinkauff, i. pp. 51–56.

Semele californica (Adams), Straits of Tartary. Schrenck, *l. c.* p. 569, pl. 22. fig. 10.

Semele incongrua, sp. n., Carpenter, Proc. Calif. Acad. Nat. Sc. 1866, p. 208, Santa Barbara and Catalina Island, California.

Cumingia moulinsii, sp. n., Folin, Mélèagrinicoles, p. 16, pl. 2. figs. 12–15, on pearl-oysters from Panama.

Veneridæ.

The important monograph of this family by Ed. Römer has made considerable progress, and is distinguished by the same scientific treatment of the subject, exact descriptions, sound criticism of synonyms and imperfectly described species, exact and beautiful figures, as the former parts.

Venus cygnus. (Lam. ?) = *Cytherea rugosa* of Philippi's first volume, and *multilamella* of the second, is found living in the Mediterranean, and to be distinguished from the fossil *C. multilamella* (Lam.); *V. casina* (L.) includes as young states *V. rusterucci* (Payr.), *discina* (Lam.), *reflexa* (Montagu), and as a rather broad variety *V. casinula* (Desh.). Weinkauff, i. pp. 107–109.—*V. gradata* (Desh.) distinguished from *fasciata* (Da Costa) = *brongniarti* of Philippi, not of Payraudeau. Gonzalez Hidalgo, Journ. Conch. xv. p. 144, Mediterranean.

Venus (*Anaitis*) *astartoides* (Beck), Bay de Castries, Mantchouria. Schrenck, *l. c.* p. 528.

Venus, subgenus *Cryptogramma* (Mörch) = *Anomalocardia* (Schumacher). The known species, twelve in number, are enumerated, with careful indication of synonymy, locality, and important critical remarks, by E. Römer, Mal. Blätt. xiv. pp. 20–28.

Venus, subgenus *Chione* (Mhlfld.) = *Murcia* (Römer, 1857), is treated by the same author. The species are arranged thus :—

1. *Omphaloclathrum* (Klein) = *Antigona* (Schumacher) : 52 species, among which *V. puerpera* (L.), *reticulata* (L.), *dysera* (L.) = *cancellata* (Lam.), *gnidia* (Brod.), *marica* (L.), *ovata* (Penn.). Mal. Blätt. xiv. pp. 28–62.
2. *Leukoma* (Römer) : 26 species, among which *V. granulata* (Gmel.), *histrionica* (Sow.), *grata* (Say), *conradi* (Römer), new name for Conrad's *Mysia tumida*, California.
3. *Chamelæa* : 7 species, among which *V. gallina* (L.).
4. *Ventricola*, nov. subgen. : 15 species, among which *V. rugosa* (Chemn.), *verrucosa* (L.), *effossa* (Bivona), pp. 92–126.

Venus (*Murcia*) *petitii* (Desh.) = *V.* (*Tapes*) *diversa* (Sow.), from Yesso, Sachalin, Mantschuria. Schrenck, *l. c.* p. 526.

Chione lordi, sp. n., Baird, in Lord's Naturalist in Vancouver Island, ii. p. 365, Esquimalt Harbour.

Psephis (see Record for 1865, p. 289) *salmonea*, sp. n., Carpenter, Proc. Calif. Acad. Nat. Sc. 1866, p. 209, Catalina Island, California.

Venus (*Gomphina*) *æquilatera* (Sow.) = *donacina* (Chemn.) = *semicancellata* (Koch) = *Donax veneriformis* (Lam.), from Hakodate. Schrenck, *l. c.* p. 533.

Calliste chione (L.), *maculata* (L.), *squalida* (Sow.), *aurantiaca* (Sow.), *guttata*, sp. n., Römer, Monogr. p. 52, pl. 16. fig. 2, *pannosa* (Sow.), *gigantea* (Chemn.), *floridella* (Gray), *umbonella* (Lam.), *impar* (Lam.), *festiva* (Sow.), *erycina* (L.),

lilacina (Lam.), *costata* (Chemn.), *phasianella* (Desh.), *accincta* (Römer), *grata* (Desh.), *planatella* (Lam.), *chinensis* (Chemn.), *florida* (Lam.), *albodorsata* (Sow.), *multiradiata* (Sow.), *spathulata* (Sow.), *hagenowi* (Dunker), *gotthardi* (Dunker), *multistriata* (Sow.), *candida* (Desh.), and *vulnerata* (Brod.) are described and figured by Ed. Römer, Monogr. *Venus*, pp. 43–177, pls. 13–21.

Cytherea lusoria (Chemn.), from the Bay of Yeddo, Lischke, Mal. Blätt. xiv. p. 174; *C. petechialis*, common at Yokohama, Martens, Preuss. Exped. i. p. 139. Both identified with *Venus meretrix* (L.), from specimens from Hakodate by Schrenck, *l. c.* p. 545.—*Venus* (*Callista*) *squalida* (Sow.), Hakodate, *pacifica* (Dillw.), *pannosa* (Sow.), and *V.* (*Tivela*) *radiata* (Sow.), from the Bay de Castries. Schrenck, *l. c.* pp. 538–545.

[*Cytherea.*] The section *Caryatis* (Römer, 1862) = *Pitar* (Römer, 1857) contains the following species:—*Caryatis tumens* (Gmel.), *cor* (Hanl.), *virgo* (Gray), *erubescens* (Dunker), *pura* (Desh.), *acuminata* (Sow.), *tellinoides* (Sow.), *alcyone*, sp. n., Römer, p. 87, pl. 32. fig. 4, *albina* (Lam.), *turbida*, sp. n., Römer, p. 88, pl. 33. fig. 6, *indecora* (Phil.), *manillæ* (Sow.), *rostrata* (Koch), *albida* (Gmel.), *phœnicopterus*, sp. n., Römer, p. 92, pl. 25. fig. 1, *alabastrum* (Reeve), *convexa* (Say), *bucculenta*, sp. n., Römer, p. 95, pl. 25. fig. 4, *kingii* (Gray), *lamarckii* (Gray), *limatula* (Sow.), *australica* (Reeve), *crocea* (Desh.), *citrina* (Lam.), *dohrni*, sp. n., Römer, p. 101, pl. 27. fig. 2, Indian Ocean, *pallescens* (Sow.), *inconspicua* (Sow.), *læta* (L.), *affinis* (Gmel.), *varians* (Hanley), *obliquata* (Hanley), *consanguinea* (C. B. Adams), *bullata* (Sow.), *pudica* (Menke), *fidicinia*, sp. n., Römer, p. 111, pl. 30. fig. 2, *sowerbyi*, new name, = *simplex* of Sow. fig. 217, not 182, *subpellucida* (Sow.), *rufescens* (Desh.), *pfeifferi* (Römer), *pellucida* (Lam.), *rudis* (Poli), *soligena*, sp. n., Römer, p. 118, pl. 32. fig. 1, Indian Ocean, *lineolata* (Sow.), *munda* (Römer), *modesta* (Sow.), *porrecta*, sp. n., Römer, p. 122, pl. 32. fig. 4, *belcheri* (Sow.), *minuta* (Koch), *chordata* and *rustica*, spp. nn., Römer, p. 125, pl. 33. figs. 2 & 3, are described and figured by Ed. Römer, Monogr. *Venus*, pp. 79–127, pls. 22–33.

Venus (*Sunetta*) *vaginalis* (Menke) = *Meroë excavata* (Hanley) = *M. subquadrata* (Sow.), from Hakodate. Schrenck, *l. c.* p. 537.

Sunetta adelinæ, sp. n., Angas, Proc. Zool. Soc. 1867, p. 909, pl. 44. fig. 5, Port Jackson.

Dosinia japonica (Reeve), from Hakodate, Schrenck, *l. c.* p. 551; and from the Bay of Yedo, Lischke, Mal. Blätt. xiv. p. 174.

Dosinia puella, sp. n., Angas, Proc. Zool. Soc. 1867, p. 909, pl. 44. fig. 4, Port Jackson.

Cyclina chinensis (Chemn.), from the Bay of Yedo, Lischke, Mal. Blätt. xiv. p. 174.

Tapes. The Mediterranean species of this genus enumerated by Weinkauff are:—*T. decussata* (L.), variable in shape and colour; *T. aurea* (Gmel.); *T. læta* (Poli) [not Linné] = *florida* and *catenifera* (Lam.) = *virginea* of Philippi and other authors on Mediterranean shells, a variety of it = *petalina* (Lam.), another = *bicolor* (Lam.), young specimens are Sowerby's *acuminata*; *T. edulis* (Chemn.) = *virginea* of English authors = *longone* (Olivi) = *virago* (Lovén); *T. nitens* (Scacchi); *T. pulchella* (Lam.) = *castrensis* (Desh.); *T. geographica* (Gmel.), a variety of this last species = *tenorii* (Costa); *T. saxicola* (Sandri). Weinkauff, i. pp. 97–106.

Tapes schnelliana (Dunker) and *T. philippinarum* (Ad. & Rv.), from the Bay of Yeddo, Lischke, Mal. Blätt. xiv. p. 173; the same as *T. semidecus-*

sata (Desh.), very common at Yokohama, Martens, Preuss. Exped. i. p. 130; and identified with the European *decussata* (L.) by Schrenck, *l. c.* p. 533.

Saxidomus nuttalli (Conrad) = *Venerupis gigantea* (Desh.) = *Venus sulcata* (Potiez & Mich.) = *Venus maxima* (Anton) = *Tapes lithoida* and *purpurata* (Sow.), from Hakodate, Schrenck, *l. c.* p. 523–526. The same species is mentioned, from the Bay of Yeddo, as *S. purpuratus* by Lischke, Mal. Blätt. xiv. p. 175, and as *S. giganteus* by the Recorder, Preuss. Exped. i. p. 140.

Venerupis lajonkairei (Payr.) is probably not identical with *V. substriata* (Mont.) = *decussata* (Phil.). Weinkauff, i. p. 93.

Cypricardia lithophagella (Lam. ?) = *Byssomya guerinii* (Payr.) = *C. renieri* (Nardo) = *Venus gibba* (Sandri). Weinkauff, i. p. 95.

Cypricardia nœmi, sp. n., Folin, Méléagrinicoles, p. 24, pl. 4. fig. 12, on pearl-oysters from Panama.

Petricolidæ.

Petricola anachoreta and *venusta*, spp. nn., Folin, Méléagrinicoles, pp. 18–21, pl. 3. figs. 1–4, 5–7, on pearl-oysters from Panama.

Glauconomyidæ.

Glauconomya. Two species from Shanghai are mentioned by Baird and Adams, Proc. Zool. Soc. 1867, p. 490.

Cyrenidæ.

Corbicula convexa (Desh.), *paranensis* (Orb.), *obsoleta* (Desh.), *limosa* (Maton), *cuneata* (Jonas), and *perplexa*, sp. n., South America, are figured in Prime's Monograph of American Corbiculidæ, pp. 3–6 and 75.

Cyrena caroliniensis (Bosc), *radiata* (Haul.), *solida* (Phil.), *insignis* (Desh.), *arctata* (Desh.), *fortis* (Prime), *olivacea* (Carp.), *regalis* (Prime), *meridionalis* (Prime), *ordinaria* (Prime), *fontaincii* (Orb.), *acuta* (Prime), *mexicana* (Sow.), *recluzii* (Prime), *maritima* (C. & B. Adams), *floridana* (Conrad), *salmacida* (Morelet), *colorata* (Prime), and *anomala* (Desh.) figured by Prime, *l. c.* pp. 12–30.

Cyclas cornea, var. *gibbosa*, Gassies, Malacol. Aquit. p. 29, fig. 9, with a silky, slightly hairy epidermis, in a pond near Lacanan, intralittoral region to the left of the Garonne.

Cyclas calyculata (Drap.), from the Amur at Nikolajewsk. Schrenck, *l. c.* p. 724.

Sphærium sulcatum (Lam.), *aureum* (Prime), *solidulum* (Prime), *triangulare* (Say), *striatinum* (Lam.), *stamineum* (Conrad), *rhomboideum* (Say), *dentatum* (Haldem.), *fabalis* [*-e*] (Prime), *occidentale* (Prime), *nobile* (Gould), *patella* (Gould), *vermontanum* (Prime), *emarginatum* (Prime), *flavum* (Prime), *elevatum* (Hald.), *partumeium* (Say), *jayanum* (Prime), *tenue* (Prime), *transversum* (Say), *contractum* (Prime), *securis* (Prime), *rosaceum* (Prime), *sphæricum* (Anthony), *truncatum* (Linsley), *lenticula* (Gould), *bahiense* (Spix), *barbadense* (Prime), *meridionale* (Prime), *maculatum* (Morelet), *veatleyii* (C. B. Adams), *portoricense* (Prime), *parvulum* (Prime), *viridante* [*-ns*] (Morelet), *cubense* (Prime), are figured by Prime, Monograph of American Corbiculidæ, pp. 33–58.

Sphærium tumidum and *spokani*, spp. nn., Baird, in Lord's Naturalist in Vancouver Island, vol. ii. pp. 365–366, British Columbia.

Cyclas punctifera, Guppy, Ann. & Mag. N. H. xix. p. 160, and Proceed. Scientific Assoc. Trinidad, ii. p. 137, St. Ann, Island of Trinidad.

Pisidium minimum, sp. n., Malzine, Faune Malacol. Belg. p. 30, pl. 3. figs. 10 & 11, Groenendal, Belgium.

Pisidium fontinale (Drap) = *pusillum* (Gmel., Jenyns), from Mantchouria. Schrenck, *l. c.* p. 725.

Pisidium watsoni, sp. n., Paiva, Monogr. Moll. Mad. p. 167, pl. 2. fig. 10, Madeira; its distinctness from *pulchellum* is confirmed in Journ. Conch. xv. p. 176.

Pisidium virginicum (Gmel.), *adamsi* (Prime), *æquilaterale* (Prime), *compressum* (Prime), *variabile* (Prime), *noveboracense* (Prime), *abditum* (Haldem.), *simile* (Prime), *chilense* (Desh.), *jamaicense* (Prime), *ferrugineum* (Prime), *ventricosum* (Prime), *rotundatum* (Prime), *ultramontanum* (Prime), and *consanguineum* (Prime) are figured in Prime's Monograph of American Corbiculidæ, pp. 61–76.

Pisidium angelicum, sp. n., Rowell, Proc. Calif. Acad. Nat. Sc. vol. iii., Angel Island, California.

Cardiidæ.

Cardium hians (Brocchi) = *C. darwini* (Mayer, Journ. Conch. xiv. 1866, p. 69), *C. echinatum* (L.), its young state = *C. ciliare* (L.) = *paucicostatum* (Sow.), a variety of it = *C. deshayesii* (Payr.), which alone is found in the Mediterranean, and not on the Atlantic shores of Europe; *C. roseum* (Lam.) = *nodosum* (Turt. and other authors), a variety of it = *scabrum* (Phil.); *C. exiguum* (Gmel.) = *pygmæum* (Donovan) = *subangulatum* (Scacchi), a variety = *parvum* (Phil.); *C. minimum* (Phil.) identified on Jeffreys's authority with *C. suecicum* (Lovén) [this identification is not correct, according to a communication from Mr. Jeffreys]; *C. norvegicum* (Spengler) = *lævigatum* of the Mediterranean conchologists; *C. oblongum* (Chemn.) = *sulcatum* (Lam.) is nearly allied to the preceding, but may be kept distinct. Weinkauff, i. pp. 129–149.

Cardium mucronatum (Poli) is distinguished from *echinatum* (L.), with which it had been identified by Philippi and Weinkauff, Gonzalez Hidalgo, Journ. Conch. xv. p. 152.

Cardium belgicum, sp. n., Malzine, Faune Malacol. Belg. p. 26, pl. 1. figs. 5 & 6, Belgian coast. [Too closely allied to some forms of *C. edule*.]

Cardium californiense (Desh.), Bay de Castries; *C. grönlandicum*, Chemn., Straits of Tartary; *C. papyraceum* (Chemn.) = *muticum* (Reeve), Hakodate. Schrenck, *l. c.* pp. 514–519.—*C. muticum* = *japonicum* (Dunker), Bay of Yedo.—*C. pseudofossile* (Reeve), Hakodate and Bay of Castries. Lischke, Mal. Blätt. xiv. pp. 176 & 177.—*C. japonicum* common at Yokohama. Martens, Preuss. Exped. i. p. 140.

Cardium (? *modestum*, var.) *centifilosum*, sp. n., Carpenter, Proc. Calif. Acad. Nat. Sc. 1866, p. 209, Monterey.

Cardium hayesii (Stimps.) found on the whole coast of Labrador. Packard, Mem. Bost. Soc. Nat. Hist. i. p. 278, pl. 7. fig. 14.

[*Cardium*] *Sorripes grönlandicus* (Beck), its varieties and differences of age described by Packard, *l. c.* p. 280, Labrador.

CHAMIDÆ.

Chama sinistrorsa (Brocchi)=*gryphina* (Lam.) is distinct from the more common Mediterranean *Ch. gryphoides* (L.), not only by the apex being turned to the left, but also by differences in the hinge. Weinkauff, i. p. 151.

MYTILACEA, Cuv. (*Lucinacea*, Ad.).

LUCINIDÆ.

Lucina reticulata (Poli)=*pecten* of the authors on Mediterranean shells. Old specimens are more equilateral and less transverse, therefore scarcely distinguishable from the fossil *L. squamosa* (Lam.).—*L. borealis* (L.)=*radula* of Montagu and Mediterranean authors.—*L. spinifera* (Montagu) occurs in a smaller and larger form; the latter=*hiatelloides* (Basterot), both recent and fossil.—*L. lactea* (L.)=*fragilis* (Phil.).—*L. leucoma* (Turt.)=*lactea* of Lamarck and most authors.—*L. divaricata* (L.)=*commutata* (Phil.).—*L. lamarcki* (Dunker coll.)=*divaricata* of Lamarck, is West Indian, and doubtful as Mediterranean. Weinkauff, i. pp. 160–170.

Lucina quadrisulcata (Orb.)=*ornata* (Reeve)=*eburnea* (Reeve), from the Bay de Castries. Schrenck, *l. c.* p. 522.

Cryptodon sarsii (Phil.). The living animal and its anatomy is described at length by M. Sars. The mantle is open in front and below, united behind and provided with one circular opening; its edges are simple, neither plaited nor provided with tentacles; no siphons. Foot cylindrical, very long, vermiform, subclavated at its end, hollow inside. Only two very small labial appendices, which are spirally twisted. Sexes separate. Vidensk. Selsk. Förhandl. 1864, pp. 1–15, pls. 4 & 5.

[*Cryptodon*] *Axinus abyssicolus* (Forbes), from the Ægean Sea, is distinct from *A. ferruginosus* of the same author and locality. Weinkauff, i. p. 172.

Ungulina rubra (Daud.) found at Cadiz. Gonzalez Hidalgo, Journ. Conch. xv. p. 159.

Mysia (*Felania*) *adamsi* and *jacksoniensis*, spp. nn., Angas, Proc. Zool. Soc. p. 910, pl. 44. figs. 9 & 10, Port Jackson.—*Diplodonta*, sp., allied to *calata* (Reeve as *Lucina*), from the Bay of Yedo. Lischke, Mal. Blätt. xiv. p. 177.

KELLIIDÆ (LASEIDÆ).

[*Lasea*] *Poronia rubra* (Mont.)=*Bornia seminulum* (Phil.), Mediterranean. Its shape is somewhat variable. Five young shells were found in a specimen. Weinkauff, i. p. 177.

Bornia (Phil.). This genus is restored by Weinkauff, on account of the different aspect of the living animal from that of *Kellia*, for Philippi's third species, *B. corbuloides* (Phil.), which is identical with *Erycina geoffroyi* of Chenu (Manuel, fig. 394) and S. Wood's fossil *Lepton deltoideum*. The edge of the valves is crenulated in some recent specimens, in others this crenulation is obsolete or entirely absent. Weinkauff, i. pp. 178–180.

Kellia geoffroyi (Payr. as *Erycina*) is a Mediterranean species, which has not yet been recognized. *K. complanata* (Phil.) is perhaps the same species. *K. suborbicularis* (Mont.), Mediterranean specimens (=*Bornia inflata*, Phil.) remain much smaller than British. *K. transversa* (Forbes), from the Ægean Sea, is doubtful, perhaps a *Montacuta*. Weinkauff, i. pp. 173–175. The

genus *Erycina* (Lam.), as restored by Récluz, cannot be adopted. Ibid. p. 180.

Kellia mac-andrewi, sp. n., Fischer, Journ. Conch. xv. p. 194, pl. 9. fig. 1, Northern Spain and Gironde.

[*Kellia*] *Erycina biocculta*, *proxima*, and *triangularis*, spp. nn., Folin, Méléagrinicoles, pp. 21–24, pl. 3. figs. 8–15, on pearl-oysters from Panama.

Montacuta. This genus is really distinct from *Kellia*, Weinkauff, i. p. 180. The Mediterranean species are *M. bidentata*, *M. ferruginosa*, and *substriata*, pp. 175–177.

Montacuta gouldi, sp. n., Thomson, Am. Journ. Conch. iii. p. 33, pl. 1. fig. 15, New Bedford Harbour.

Leptonidæ.

Lepton adamsi, sp. n., Angas, Proc. Zool. Soc. 1867, p. 910, pl. 44. fig. 11, Port Jackson.—*Lepton merœum*, sp. n., Carpenter, Proc. Calif. Acad. Nat. Sc. 1866, p. 210, San Diego, California.

Pristiphora, g. n., Carpenter, = *Pristis* of the same author, Brit. Assoc. 1864 (preoccupied). Testa *Tellimyæ* Adamsiorum similis; dentibus cardinalibus nullis; lateralibus utraque valva conspicuis, postice elongatis, antice curtioribus, cardinem versus transversim sulcatis; fossa cartilaginali inter eos sita. *P. oblonga*, sp. n., Carpenter, Proc. Calif. Acad. Nat. Sc. 1866, p. 210, San Diego, California.

Solenomyidæ.

Solenomya togata (Poli) = *mediterranea* (Lam.), Mediterranean. Weinkauff, i. p. 183.

Astartidæ.

Astarte striata (Leach), figured by Packard, Mem. Bost. Soc. Nat. Hist. i. pl. 7. fig. 1, Labrador.—*A. fluctuata*, sp. n., Carpenter, Proc. Calif. Acad. Nat. Sc. 1866, p. 209, Catalina Island, California.

[*Gouldia*] *Circe minima* (Mont.). There are two varieties in the Mediterranean, a rather inequilateral, *Venus cyrilli* (Scacchi), and a rather flat and equilateral, the true *minima*; besides, there is a third form, more triangular, = *V. triangularis* (Mont.), in the British seas, but not yet known from the Mediterranean; all three are linked to each other by intermediate specimens. Weinkauff, Conchyl. i. p. 123.

Crassatella esquimalti, sp. n., Baird in Lord's Naturalist in Vancouver Island, vol. ii. p. 368, Esquimalt Harbour.

Cardita sulcata (Brug.) not = *antiquata* (L.), *C. trapezia* (L.?, of most authors). *C. calyculata* (L.) very variable; some specimens are so near to Adamson's *ajar*, from West Africa, that the specific validity of this, as well as of *C. variegata* (Brug.) and *C. subaspera* (Lam.), is doubtful. Weinkauff, *l. c.* i. p. 157.

Cyclocardia, g. n., T. A. Conrad. Rounded, equivalve, radiately costate, with a *rough epidermis*; hinge with two robust teeth in the left valve, directed *obliquely backward*, the posterior one elongated and slightly curved; anterior tooth of the right valve rudimentary; pallial impression entire. Structure of the valves less dense than in *Cardita*. Anterior muscular impression longer than in that genus. To this new genus are to be referred

C. borealis (Conrad), New England, and *C. ventricosa* (Gould), California. Am. Journ. Conch. iii. p. 191.

Unionidæ.

E. A. Forel (Inaugural Dissertation, see above, p. 498) publishes some interesting and very curious observations on the first stages of development of *Anodonta*. The eggs are found within the gill-pouches of the adult animal from July to January, the cleavage process taking place in autumn. When expelled from the gill-pouches, they sink slowly in the water; the very tender enveloping membrane is torn by slight contact with the bottom; the shell of the hatched young animal gapes widely, the adductor muscle (which in this stage of growth is single) not being able to keep the valves together. A single long byssal thread is thrown out, which plays in the water. The organs of circulation and digestion are not yet developed. From January to April the author found young *Anodontæ* in this stage often on the gill-covers, lips, and fins of fishes, especially *Leuciscus* and *Gobio*; they were enclosed in a sort of cyst, consisting of epithelial cells. He supposes that the byssal thread serves to take hold of the fish, and that the spines, which exist in that stage on the edge of the valves, are of essential use to the mollusks in fixing themselves to its body. The further development could not be observed by the author.

Unio. A monograph of this genus is continued in the late Mr. Reeve's Conchologia Iconica, parts 256–265. Critical remarks concerning several species contained in this work [probably by Lea], in Am. Journ. Conch. iii. p. 246.

Unio batavus (Lam.), from the Lake of Geneva, described and figured by Brot, Etudes sur les Nayades du lac Léman, p. 49, pl. 9.

Unio mancus (Lam.) regarded by Moquin-Tandon as a variety of *U. batavus*, is treated of by Drouet, Moll. Côte d'Or, p. 104. He does not come to a final conclusion. He had specimens from the same rivulet (Dree) which is given by Lamarck as locality; and no other form of *Unio* occurs in it. *U. nanus* (Lam.) is a diminutive form of the same species, living in the Saône river; this name, as well as *U. amnicus* (Ziegl.), will pass into the synonymy of *U. mancus*, if the species be reintroduced.

Unio lambottei and *ryckholtii*, spp. nn., Malzine, Faune Malacol. Belg. p. 32, pl. 2. figs. 3, 4, and figs. 1, 2, in the river Meuse.—*U. robianoi*, sp. n., ibid. p. 33, pl. 1. figs. 1–4, from a streamlet near Harvengt, in Belgium [may be safely referred to *U. litoralis*].

Unio danielis, sp. n., Gassies, Malacol. Aquit. *l. c.* p. 26, fig. 8. Allied to *U. pictorum*, distinguished by radiating striæ and the form of the cardinal and lateral teeth. Several pools in the intralittoral region to the left of the Garonne, in company with *Anodonta piscinalis*.

Unio maccarthyanus, sp. n., Bourguignat, Moll. Nouv. fasc. vii. 1866, p. 220, pl. 34. figs. 8–11, Algeria.

Unio grayanus (Lea), Ussuri River, a tributary of the Amur; *U. pictorum* (L.), Ussuri and Amur, Schrenck, *l. c.* pp. 694–699; a very large specimen of the first figured, pl. 27. figs. 1–3.

Unio (*Lampsilis*) *subtortus* and *U.* (*Dysnomia*) *lampreyanus*, spp. nn., Baird and Adams, Proc. Zool. Soc. p. 491, pl. 26. figs. 1 & 2, Shanghai. Some particulars concerning the synonymy of other Chinese species of *Unio* are given in the same paper. [To the synonyms of *U. douglasiæ* given here may be added *Unio osbeckii* of Philippi, Zeitschr. f. Mal. 1844; *U. lampreyanus* appears to be very similar to *U. divergens*, Cantor, which the Recorder knows from Cantor's description only.]

Unio cambojensis (Sow.) and *U. swinhoei* (Reeve), apparently new species in Reeve's 'Conchologia Iconica,' parts 256, 257, both from Cambodja.

Unio caudiculatus, sp. n., Martens, Mal. Blätt. xiv. p. 16, Borneo.—*U. plicatulus* (Lea) inhabits Borneo, not Southern Africa, as erroneously stated by Reeve. Id. ibid.—*U. abyssinicus* (Martens, see Zool. Record, iii. p. 210) redescribed, and *U. tricolor* (Küst.), Lake Tzana, Abyssinia. Id. ibid. pp. 17–19.

Unio zelebori (Dunker), Reis. Novar. Moll. pl. 2. fig. 28, New Zealand.

Unio. Thirty-seven North-American species, described some years ago by Lea, are figured in the Journal of the Acad. of Nat. Sciences of Philadelphia, second series, vol. vi. part 1, together with the following from other countries:—*U. rasus*, *dignatus*, *mosulensis*, *orontesensis*, *bourguignatianus*, *damascensis*, *syriacus*, and *delicatus*, from Asia Minor; *tripartitus*, from India; *pazii* and *laosensis*, from Siam; *kirkii*, *nyassaensis*, *aferulus*, and *natalensis*, from Eastern Africa; *paramattensis*, from New South Wales.

[*Margaritana*] *Unio* (*Marg.*) *margaritifer* (L.), in the Ussuri River, in Mantchouria, and in a little river of the island of Sachalin, rare. The fresh-water shells yielding pearls in Eastern Siberia and Mantchouria, are probably not this species, but *Anodonta plicata*. Schrenck, *l. c.* pp. 700–704.

Monocondylæa compressa and *moulotiana* (Lea), from Siam, figured in Journ. Acad. Nat. Sci. Philad. vol. vi. part 2.

Alasmodonta (subgenus *Pseudodon*, Conrad) *vandembuschiana* (Lea) = *zollingeri* (Mouss.) = *cumingi* (Lea), Borneo, Sumatra, and Java; *A. crispata* (Mouss.) = *planulata* (Lea) = *fragilis* (Küst.), Java, nearly allied to the former. Martens, Mal. Blätt. xiv. p. 13.

[*Barbala*] *Anodonta plicata* (Solander), with which is to be united as a variety *A. herculea* (Midd.), is common in the Amur river and its tributaries from the streamlets of Dauria to its mouth in the Gulf of Tartary. Schrenck, *l. c.* pp. 404–718, pl. 27. fig. 4.—*A. magnifica* (Lea), in the southern tributaries of the same river, pl. 28. figs. 1, 2.—*A. anatina* (L.), a rather large variety, corresponding to Rossmässler's fig. 420; and *A. cellensis* (Gmel.), Amur at Nikolajewsk. Schrenck, *l. c.* pp. 718–723.

Anodonta. Mr. Sowerby treats of this genus in the late Mr. Reeve's Conchologia Iconica, parts 262–265. Critical remarks concerning several species [probably by Lea] in Am. Journ. Conch. iii. p. 247.

Anodonta cygnea (L.), *ventricosa* (Pfr.), *cellensis* (Gmel.), *anatina* (L.), *pictetiana* (Mortillet), and *piscinalis* (Nilss.) are described and figured, most of them in different stages of age, with critical remarks, by A. Brot, Etudes sur les coquilles de la famille des Nayades qui habitent le bassin du Léman: Bâle et Genève, 1867, 8vo, with 9 plates.

Anodonta elachista, sp. n., Bourguignat, Moll. Nouv. fasc. vi. 1866, p. 197, pl. 31. figs. 12–14, Arles, Southern France.

Anodonta harlandi, sp. n., Baird and Adams, Proc. Zool. Soc. 1867, p. 492,

pl. 26. fig. 3, Shanghai. *An. tenuis* (Gray) and *gibba* (Cantor), also from Shanghai, are mentioned in the same paper.

Anodonta exilis (Lea)=*polita* (Mouss.)=*siliqua* (Küst.), Siam, Sumatra, and Java, in two varieties.—*A. purpurea*, Val.=*burroughiana*, *subcrassa*, *tenuis*, *crepera*, and *gracilis* (Lea)=*Unio bengalensis* (Lea)=*Unio verecundus* (Gould). It is a very variable shell, the only one of this family known from the Philippines. Martens, Mal. Blätt. xiv. p. 12.

Anodonta dallasiana, *tryonii*, *williamsii*, *doliaris*, *leonensis*, and *bealei*, all North American, and described by Lea some years ago, are figured in Journ. Acad. Nat. Sci. Philadelphia, vol. vi. part 1.

Anodonta subcarinata, sp n., Currier, Am. Journ. Conch. iii. p. 113, pl. 6. fig. 5, Michigan.

Mutelidæ.

Pleiodon. Two species are figured in Reeve's Conchologia Iconica, part 258.—T. A. Conrad remonstrates against the identity of his *Pleiodon macmurtrii* with *Iridina ovata* (Swains.). Am. Journ. Conch. iii. p. 4.

Spatha alata, *nyassaensis*, *modesta*, and *natalensis* (Lea) figured in Journ. Acad. Nat. Sci. Philad. vol. vi. part 1.

Mytilidæ.

Mytilus edulis (L.). Its varieties are arranged by Weinkauff in the following manner (i. pp. 224–227):—

1. Atlantic varieties: a. *incurvata* (Penn.); b. *abbreviata* (Lam.); c. *pellucida* (Penn.) and *subsaxatilis* (Williamson) (this is also common at Algiers, on the anchor-chains of the port, to the depth of two fathoms; small, but esteemed as food); d. *retusa* (Lam.).
2. Mediterranean varieties=*M. galloprovincialis* (Lam.): a. *ungulata* (L.), also on the Atlantic coast of France and England; b. *flava* (Poli), this occurs at Algiers only in certain seasons; c. *sagittata*.

Mytilus edulis, Bay de Castries; *M. ungulatus* (Lam.), Hakodate; *M. dunkeri* (Reeve), Hakodate and Sachalin. Schrenck, *l. c.* pp. 504–508.

Mytilus pictus (Born)=*afer* (Gmel.)=*africanus* (Chemnitz)=*elongatus* (Orb. not Lam.), a variety=*smaragdinus* (Dunker, not Lam.), Algiers on rocks in a depth of ten and more metres, attains to a length of 126 millimetres, and is rather variable in breadth; *M. perna* (L.) and *elongatus* (Lam.) are different species, the first blue, the second white and violet. Weinkauff, i. pp. 227–229.

Mytilus minimus (Poli) is Mediterranean, and does not occur in the British Channel.—*M. crispus* (Cantraine), distinguished by its malleated surface, at Venice, in company with the preceding, also found boring. Weinkauff, i. pp. 229, 230.

Mytilus (*Aulacomya*) *janeirensis* (Dunker) and *M. ater* (Zelebor), Reis. Novar. Moll. pl. 2. figs. 29 & 30.

Mytilus (*Septifer*) *virgatus* (Wiegm.)=*bifurcatus* (Conrad)=*Septifer hermannseni*, *crassus*, *furcatus*, and *grayanus* (Dunker), from Hakodate; differences of age pointed out. Schrenck, *l. c.* pp. 508–512.

Modiola adriatica (Lam.)=*tulipa* of Mediterranean conchologists, not of Lamarck=*radiata*, *tulipa*, and *lævis* of Sandri, common in Dalmatia, and very variable in colour. Weinkauff, i. p. 219.

Modiola modiolus (L.)=*philippinarum* (Hanley)=*australis* (Gray), Hakodate, Schrenck, *l. c.* p. 498; Bay of Yedo, Lischke, Mal. Blätt. xiv. p. 179.

Modiolaria nigra (Gray) and *vernicosa* (Midd.), Bay de Castries, Schrenck, *l. c.* pp. 495–498.—*M. barbata*, sp. n., Angas, Proc. Zool. Soc. 1867, p. 911, pl. 44. fig. 12, Port Jackson.

Lithodomus aristatus (Dillw.)=*caudiger* (Lam.), Algiers; the tail of the right valve lies in the prolongation of the under edge, that of the left in the prolongation of the upper edge. Weinkauff, i. p. 222.

Modiola (*Lithophagus*) *schmidtii* (Schrenck), Sachalin. Schrenck, Moll. Amurl. p. 500, pl. 21. figs. 4–7.—*Modiola* (*Lithodomus*) *excavata*, sp. n., Folin, Méléagrinicoles, p. 25, pl. 4. figs. 3–5, on pearl-oysters from Panama.

Dreissenidæ.

Dreissena polymorpha (Pall.). On its migration, see p. 503.

Dreissena cochleata (Nyst) figured by Malzine, Faune Malacol. Belg. pl. 3. figs. 4, 5.

Aviculidæ (incl. Vulsellidæ).

Vulsella. The anatomy of this genus has been examined by Léon Vaillant; there are several points of similarity to *Perna*, especially in the structure of the rectum. The adductor muscle is apparently double; but one portion is nothing else than the retractor of the foot. The foot is long and bent like an elbow (*coudé*), presenting a slit as if for a byssus; but there is no byssus, at least in the adult animal. The gills are pectinated as in *Pecten*. The author thinks that the genus may safely be retained in the family "Malleacées," or Aviculidæ, forming a passage from those provided with a byssus, as *Avicula, Perna, Malleus*, to those without a byssus, as *Crenatula*. (L'Institut, July, 1865.)

Avicula tarentina (Lam.)=*hirundo* (Poli, but not of Linné, who united all species known to him under this name)=*aculeata* (Risso, Reeve), but distinct from *falcata* (Lam.) and from *atlantica* (Lam.), Mediterranean. Weinkauff, i. pp. 230–232.

[*Perna*] *Melina costellata* (Conrad) and *australica* (Reeve), Hakodate. Schrenck, *l. c.* pp. 493–495.

Malleus obcolutus, sp. n., Folin, Méléagrinicoles, p. 27, pl. 4. figs. 6–8, on pearl-oysters from Panama.

Pinna. The Mediterranean species are arranged by Weinkauff in the following manner:—

1. *P. pectinata* (L.)=*ingens* (Penn. and the other British authors)=*lævis* (Donovan)=*truncata* (Phil.).
   P. pectinata, var. *angusta*=*fragilis* (Penn.)=*muricata* (Da Costa and other British authors, not L.)=*rudis* (Poli, not L.)=*pectinata* of most authors, Reeve, Conch. Icon. fig. 42, dredged at Algiers.
2. *P. pernula* (Chemn.)=*rudis* (Lam., Desh., Phil., Orb. Can., M'Andrew, not L.).
3. *P. nobilis* (L.)=*rotundata* (Gmel.)=*squamosa* (Lam., Phil., &c.).

P. nobilis, β. *æquilatera*: 1. rufescens squamis brevibus = *P. obeliscus* (Chemn., Reeve, fig. 3).

P. nobilis, β. *æquilatera*: 2. rufescens vel albido-fusca, squamis longioribus (Chemnitz, fig. 777).

P. nobilis, γ. *inæquilatera*: 1. rufescens, squamis longis = Chemn. fig. 778 = *P. muricata* of Poli, Philippi; *nobilis* β of Lam. Reeve, fig. 57

P. nobilis, γ. *inæquilatera*: 2. albida vel fusca, squamis angustis = *aculeatosquamosa*. Reeve, fig. 10.

Quite doubtful and not recognizable are *P. marginata* (Lam., Phil.), *P. vitrea* (Gmel., Phil.), *saccata* and *papyracea* of Gravenhorst, founded on young shells or even fragments. Weinkauff, i. pp. 232–240.

Gonzalez Hidalgo enumerates the same three species with a similar synonymy; *pectinata* (L.) is found also at Cadiz. He agrees with Reeve that the name *rudis* (L.) is to be left to the West-Indian species figured in Reeve's Conchologia Iconica: Journ. Conch. xv. pp. 167–170. To which Jeffreys makes objections, ibid. p. 231.

Pinna, sp., described without name, from the Bay of Yeddo: Lischke, Mal. Blätt. xiv. p. 179. Probably the same which has been found at the same place by the Recorder, and which in its very young state has been named *P. japonica* by Hanley: Martens, Preuss. Exped. i. p. 141.

OSTRACEA, Cuv. (*Pectinacea*, Ad.).

Arcidæ.

Arca noæ (L.) very variable in shape. *A. tetragona* (Poli) is now acknowledged to be a distinct species; it may be a form branched off from *noæ* in early youth, and propagated in its deformed state, which may have been caused by its dwelling in deep water. *A. barbata* (L.) also variable in shape, more common and larger in the Adriatic than elsewhere. *A. lactea* (perhaps not of Linné, but of most authors) also most variable; a subrotund variety of it is *A. gaimardi* (Payr.); another from the Adriatic comes very near to the northern *nodulosa* (Müll.). *A. diluvii* (Lam.) = *antiquata* of Mediterranean conchologists, not of Linné; a large recent specimen has the scratches on the area arranged in a manner very like to that of the fossil *A. fichteli* and *turonica*. *A. imbricata* (Poli, not Bruguière) perhaps = *pulchella* (Reeve, fig. 122). Weinkauff, i. pp. 190–202.

Arca inflata, *cornea*, and *obtusa* (Reeve), from the Bay of Yeddo. Lischke, Mal. Blätt. xiv. pp. 177, 178.—The first is very common at Yokohama. Martens, Preuss. Exped. i. p. 140.—*A. broughtoni* (Schrenck), from Hakodate and Nangasaki. Schrenck, *l. c.* p. 578, pl. 24 [apparently identical with *inflata*].

Arca angusta, sp. n., Dunker, Novitat. Conch. p. 93, pl. 31. figs. 8–10, Feejee Islands; *A. insignis*, sp. n., id. ib. figs. 11–13, locality unknown.

Barbatia venusta (Dunker, Mal. Blätt. 1859) figured, Novitat. Conch. pl. 31. fig. 1; *B. mollis* and *B. grayana*, spp. nn., Dunker, ibid. p. 92, pl. 31. figs. 2–4 and 5–7, the first from the Feejee Islands, the second from India.

Scaphula deltæ, sp. n., Blanford, Journ. As. Soc. ii. p. 71, pl. 3. figs. 7–10, twice as broad as high. Delta of the Irawady, in brackish water, under stones in creeks, adhering by a byssus.

Pectunculus. The recent Mediterranean species of this genus are arranged by Weinkauff (i. pp. 183-190) in the following manner :—

1. *P. glycimeris* (L.) = *pilosus* (L. and most authors)=*stellatus*, Reeve. Mediterranean and Atlantic coasts from Senegal to Norway.
2. *P. pilosus* (Born)=*bimaculatus* (Poli)=*siculus* (Reeve, fig. 41) and *pilosus* Reeve, fig. 13. Mediterranean, Madeira, Canaries.
3. *P. insubricus* (Brocchi)=*violascens* (Lam., Phil., Reeve, &c.), a variety of it, Reeve, fig. 9 *b*=*zonalis* (Lam.), another=*stellatus* (Gmel., Lam.), young states=*nummarius* (L. and other authors) and *lineatus* (Phil.). Mediterranean.

Pectunculus glycimeris (L.), from Hakodate and coast of Mantchouria. Schrenck, *l. c.* p. 581.

Nucula. The known Mediterranean species are:—*N. sulcata* (Bronn), which very easily loses its superficial sculpture, in which state it may be the *N. decussata* of Sowerby; *N. nitida* (Sow.); *N. nucleus* (L.), a variety of it =*N. radiata* (F. & H.); *N. ægensis* (Forb.) may be a not yet full-grown and somewhat deformed *nucleus* or *nitida*, nor has *N. macandrei* (Hanley) a better right to be regarded as a distinct species. Weinkauff, i. pp. 202–207.

Nucula expansa (Reeve) abundant on the coast of Labrador; in Chateau Bay, 50 fathoms, of large size. Packard, Mem. Bost. Soc. Nat. Hist. i. p. 279.

Nucula lyalli, sp. n., Baird, in Lord's Naturalist in Vancouver Island, vol. ii. p. 369, Esquimalt Harbour.

Leda. Three species occur in the Mediterranean:—*L. commutata* (Phil. 1844)=*minuta* of Brocchi and Philippi, vol. ii., not of Müller and Fabricius =*striata* of Philippi, vol. i., not of Lamarck, rather variable, the keel more or less distinct; *L. pella* (L.)=*interrupta* (Poli)=*emarginata* (Lam.); *L. tenuis* (Phil. vol. i.)=*lenticula* (Möller)=*pygmæa* of Philippi, vol. ii., Lovén, Forbes and Hanley, not of Münster. Weinkauff, i. pp. 207–212.

Leda fossa, sp. n., Baird in Lord's Naturalist in Vancouver Island, vol. ii. p. 368, Esquimalt Harbour, 10–15 fathoms.—*L. hamata*, sp. n., Carpenter, Proc. Calif. Acad. Nat. Sc. 1866, p. 210, California.

Yoldia lanceolata (J. Sow.)=*oblonga* (G. B. Sow.)=*arctica* (Brod. et Sow.) =*æolica* (Val.), Gulf of Tartary. Schrenck, *l. c.* p. 512.

Pectinidæ.

Pecten varius (L.) fixes itself by a byssus, but is able voluntarily to detach itself, and to produce a new one.—*P. jacobæus* (L.) is without a byssus when adult. P. Fischer, Journ. Conch. xv. p. 107.

Pecten pusio (L.?)=*multistriatus* (Poli); all Mediterranean specimens are regular, never distorted like the British variety, which is *P. distortus* (Da Costa); it is not certain whether the Linnean name *pusio* belongs to this species. *P. varius* (L.) attains to a length of 90 millimetres, and there are in some specimens as many as 36 ribs; the variety 1 of Jeffreys, Brit. Conch., is the most common form in the Mediterranean. Weinkauff, Conchyl. Mittelm. i. p. 246.—*Pect. sentis* and *P. daucus* (Reeve) are probably identical. Gonzalez Hidalgo, Journ. Conch. xv. p. 263.

P. philippii (Récluz)=*gibbus* of the Mediterranean conchologists; Weinkauff thinks that *P. gibbus* (L.) and *P. turgidus* (Gmel.) [=*nucleus*, Born], both from the West Indies, may finally prove to be only varieties of the

same species as the Mediterranean shell. *P. opercularis* (L.) very variable, young specimens being longer; ribs sharp or rounded, transverse striæ almost straight or serrated, colour not less variable, white, yellow, violet, or red, so that it is impossible to distinguish, even as local varieties, the *P. audouinii* (Payr.) and *lineatus* (Donovan). *P. glaber* (L.)=*sulcatus* (Born), likewise variable in the number of the ribs, the existence of longitudinal striæ, and the colour. *P. flexuosus* (Poli)=*inflexus* (Payr.)=*polymorphus* (Brown), varies in similar manner as the preceding, from which it is well distinguished. *P. septemradiatus* (Müll.)=*clavatus* (Poli)=*dumasii* (Payr.), also very variable. *P. bruei* (Payr.)=*leptogaster* (Brusina), *P. actoni* (Martens), distinct from *P. similis* (Laskey), both in the Mediterranean Sea. Weinkauff, Conchyl. Mittelm. pp. 246–266.

Pecten gunellarii [probably misspelt for *gemellarii*], Biondi, described by Weinkauff, *l. c.* p. 265, Sicily.

Pecten laqueatus (Sow.)=*antonii* (Phil.), Nangasaki and Hakodate; *P. jessoensis* (Jay)=*brandtii* (Schrenck), pl. 20. figs. 1–4; *P. sieftii* (Bernardi), pl. 21. figs. 1–3; *P. islandicus* (Müll.), Hakodate and Mantschuria. Schrenck, *l. c.* pp. 482–492.—*P. laqueatus* and *yessoensis*, together with *crassicostatus* (Sow.), *squamatus* (Gmel.), and *japonicus* (Gmel.) from the Bay of Yedo. Lischke, Mal. Blätt. xv. pp. 179–182.—*P. japonicus*, and another species, allied to *jacobæus*, figured in the Japanese Encyclopedia. Martens, Preuss. Exp. i. p. 141.

Lima squamosa (Lam.), number of ribs varying from 19 to 24. *L. inflata* (Chemn., Lam.)=*ventricosa* (Sow.); ridges in some specimens large, with smaller interstitial ones, in others narrow. *L. hians* (Gmel.)=*tenera* (Turt., Phil. &c.), Mediterranean specimens generally thin and pellucid; but there are also typical specimens with a strong shell in this sea, although always smaller than the British specimens; number of the ribs also variable. Weinkauff, i. pp. 240–244.

Anomiidæ.

Anomia. The species living in the Mediterranean are reduced by Weinkauff to two, *ephippium* (L.) and *patelliformis* (L.); the former including as varieties *A. cepa* (L.), *polymorpha* (Phil.)=*pyriformis* (Lam.), *scabrella* (Phil.), *electrica* (L.), and *squamula* (L.)=*margaritacea* (Poli). The second species has as synonyms *A. undulato-striata* (Chemn.), *undulata* (Gmel.), *pectiniformis* (Poli), and *striata* (Donovan). Weinkauff, i. pp. 278–283.

Anomia cytæum (Gray) and *laqueata* (Reeve), from Hakodate. Schrenck, *l. c.* pp. 473–475.—*Anomia*, sp., perhaps *macroschisma* (Desh.), from the Bay of Yedo. Lischke, Mal. Blätt. xiv. p. 162.

Ostrea. A paper on oyster-culture in Amer. Natur. i. pp. 196–202.

Ostrea edulis (L.). Some notes on the oysters of Venice and Triest, their growth and trade, are published by Senoner, Zool. Garten, viii. pp. 106, 107.

The oysters of the Mediterranean are referred by Weinkauff to the following species:—*O. edulis* (L.), var. *crassa*=*O. hippopus* (Lam.); the typical *edulis* appears to be introduced, as, for example, at Algiers, from the oyster-banks of Varennes; *O. cristata* (Born), with var. *depressa* (Phil.); *O. lamellosa* (Brocchi); *O. ruscuriana* (Lam.); *O. senegalensis* (Gmel.); *O. rosacea* (Desh.); *O. plicata* (Chemn.)=*plicatula* (Gmel.); *stentina* (Payr.); *O. cochlear* (Poli)=*italica* (Desh.). Weinkauff, *l. c.* pp. 272–278.

Ostrea plicata (Chemn.), Cadiz; *Gryphæa angulata* (Lam.) is probably only an individual variation of this species. Gonzalez Hidalgo, Journ. Conch. xv. p. 269.

Ostrea laperousii (Schrenck), 1861 = *O. talienwhanensis* (Crosse), 1862, pl. 19. figs. 1–6, Bay de Castries, Sachalin, Yesso, &c. Schrenck, *l. c.* pp. 475–482.—*Ostrea*, sp., allied to *hippopus* (Lam.), from the Bay of Yeddo. Lischke, Mal. Blätt. xiv. p. 182.—*O. gigas* (Thunberg), allied to *virginiana* (Gmel.), from the Bay of Yeddo. Martens, Preuss. Exped. i. p. 140.

Ostrea purpurea, sp. n., Angas = *O. edulis*, var. *purpurea*, of Hanley, is the common "mud-oyster" which supplies the Sydney markets; *O. mordax* (Gould) is the "rock-oyster" of the colonists. Angas, Proc. Zool. Soc. 1867, p. 934.

Ostrea virescens, sp. n., Angas, *l. c.* p. 911, pl. 44. fig. 13, Port Jackson.

BRACHIOPODA.

Terebratula davidsoni, sp. n., A. Adams, Proc. Zool. Soc. 1867, p. 314, pl. 19. fig. 30, Satanomosaki, Japan, 55 fathoms.

Waldheimia venosa = *Anomia venosa*, Solander, in Dixon's Voyage round the World, described and figured by Davidson, Ann. & Mag. Nat. Hist. xx. pp. 81–83, Falkland Islands.

Terebratula (*Waldheimia*) *grayi* (Davids.), from Hakodate. Schrenck, *l. c.* p. 465.—*T.* (*Terebratella*) *rubella* (Sow.), Hakodate and Straits of Sangar; *T.* (*T.*) *coreanica* (Ad. et Rv.), pl. 18. figs. 1–7, Hakodate, not rare. Schrenck, *l. c.* pp. 466–471.

Terebratula (*Rhynchonella*) *psittacea* (Gmel.), Hakodate. Schrenck, *l. c.* p. 471.

Lingula. Living specimens have been observed repeatedly by Dr. Carl Semper; the arms are never stretched out, or even protruded beyond the shell; the valves are generally moved in a somewhat lateral direction when the shell is to be opened, and this movement is rather slow. The propulsion of the blood within the vessels by vibrating cilia, and the absence of a heart proper, is repeatedly stated. Zeitschr. f. wissensch. Zool. xiv. 1864, p. 424. Another account of the same subject, containing a more detailed description of the organs of circulation, by the same author, ibid. vol. xi. 1862, pp. 100–103.

MOLLUSCOIDA

BY

E. Perceval Wright, M.A., M.D., F.L.S.

Alder, Joshua. Notices of some Invertebrata, in connexion with Mr. Gwyn Jeffreys's Report on dredging among the Hebrides. Brit. Assoc. Report, pp. 206–208.

Busk, G. On new genera and species of Polyzoa and Sertularians. Quart. Journ. Mic. Sc. vol. xv. pp. 240–244. Zoophytology, plate 36.

Claparède, E. Miscellanées Zoologiques.—V. Sur le *Loxosoma kefersteinii*. Annal. d. Scien. Natur. 5e série, tome vii. 1867, pp. 28–30, pl. 6.

Costa, A. Osservazioni embriologiche sulla *Salpa pinnata*. Rend. Accad. di Napoli (Dec. 1866), pp. 438–440.

Crosse, H. Note sur un genre intermédiaire entre les Ascidiens et les Mollusques lamellibranches. Journal de Conchyl. (April 1867) vol. xv. pp. 101–107.

Fischer, P. Etudes sur les Bryozoaires perforants de la famille des Térébriporides. Archiv. Mus. Hist. Natur. tom. ii. pp. 292–313, pl. 11.

Hancock, Albany. On the Anatomy and Physiology of the Tunicata. Journ. Linn. Soc. 1867, vol. ix. pp. 309–346.

It is not possible here to do more than call attention to a few of the more important facts in Mr. Hancock's valuable memoir. Few genera have been described among the simple Tunicates as possessing a well-developed liver. It is, however, in all sufficiently distinct, and may be found on dissection beneath the gland-like substance which forms a pretty thick coating over the stomach and intestine in all Ascidiæ, where it forms a thin coating on the surface of the intestine. This hepatic organ may have been known to Lister, but has escaped the notice of other anatomists, except Krohn. The reproductive organs present some degree of variety, and are described as they occur in *Ascidia*, *Styela*, *Cynthia*, *Pelonaia*, *Clavelina*, and other genera. The hæmal system is one of the most difficult to investigate; the author relied almost entirely on dissection aided

by the accumulation of blood-corpuscles in the various parts of the system: though this method be laborious, yet the results are satisfactory, as in such natural injections there is very little danger of being deceived by the blood having become extravasated from its natural channels. The blood-system may be looked on as closed; the blood-channels are well defined, but it is not easy to determine whether or not they are provided with proper walls; the heart is tubular. In addition to the two great branchial channels, the dorsal and ventral (which communicate with each other through the numerous transverse channels of the branchial sac), the blood-circle is rendered more complete by the presence of cylindrical hollow bands (suspenders), which pass from the transverse branchial channels and from the great ventral channel to the walls of the pallial chamber; the function of these bands as blood-carriers seems hitherto to have escaped detection. The nervous system is in a very rudimentary condition; there is but one ganglion, invariably placed between the two respiratory tubes. The relation that subsists between the Tunicata and Polyzoa is briefly adverted to, the author at present neither agreeing with the views of Professor Allman nor with those of Professor Huxley, but inclining to think that the branchial sac is a new and distinct development, as the endostyle is, and as are the oral lamina, the branchial tubercle, and the tentacular filaments of the inhalant tube—and that all these organs have equally their origin in the lining membrane, and have no homological representatives in the Polyzoa. This interpretation of facts leads to a belief that the branchial sac is the rudiment of the Lamellibranchiate gill. The ganglion in the Tunicata appears to be the true representative of the branchial ganglion in the Lamellibranchiata. This determination of its nature agrees well with its position, and we thus find in the nervous element a corroboration of the above suggestion as to the homological relation of the branchial sac.

Heller, C. Die Bryozoën (Polyzoa) des Adriatischen Meeres. Verhandl. der k.-k. zool.-bot. Gesellschaft in Wien, Bd. xvii. pp. 77–136, and Tafeln; also separate reprint, Wien, 1867, pp. 1–60, Taf. 1–6.

In this catalogue of the Polyzoa met with in the Adriatic Sea, Professor Heller enumerates 85 species of *Cheilostomata*, 27 of *Cyclostomata*, and 6 of *Ctenostomata*. Several new genera and species are described. Figures of the new species are given. Tables of the bathymetrical and geographical distribution of the species are appended.

Hyatt, A. Observations on Polyzoa. Suborder Phylactolæmata. Communications Essex Institute, vol. v. (Nov. 14, 1866) pp. 97–112.

These observations are chiefly anatomical, and are continued

from vol. iv. p. 228. The figures referred to are given in vol. iv.; and the paper, which treats of the muscular and nervous systems, is still to be continued.

McIntosh, W. C. Notes on *Pelonaia corrugata*. Ann. & Mag. Nat. Hist. 1867, vol. xix. pp. 414–418, plate 12.

Norman, A. M. Report of Committee for exploring Coasts of the Hebrides.—Part II. Polyzoa, Echinodermata, Actinozoa, and Hydrozoa. Brit. Assoc. Report for 1866 (published 1867), pp. 193–206.

Packard, A. S. Observations on the glacial phenomena of Labrador and Maine, with a view of the recent invertebrate fauna of Labrador. Mem. Boston Soc. of Nat. Hist. 4to, vol. i. part 2, 1867, pp. 210–303, pls. 7 & 8.

The list of invertebrates is compiled from materials accumulated during the summer of 1864, while the author was coasting from the little Mecatina Island in the Gulf of St. Lawrence to Hopedale, the lowest Moravian settlement. Though the list is naturally imperfect, still it gives some important information as to the depth at which the different species were found, the nature of the sea-bottom, &c.: some new species are described. Dr. A. A. Gould, Dr. W. Stimpson, and Mr. E. S. Morse gave valuable assistance in identifying the species. Many typographical errors which will be met with in an article by Mr. Packard on the marine invertebrates found at Caribou Island, published in the 'Canadian Naturalist' for 1863, will be found corrected in this memoir.

Smitt, F. A. Kritisk förteckning öfver Skandinaviens Hafs-Bryozoer. Œfvers. af K. Vet.-Akad. Förhandl. 1865, No. 2. pp. 115–142, Tafl. 16. Ibid. 1866, pp. 395–534, Tafl. 3–13. Ibid. 1867, No. 5. pp. 279–429, Tafl. 16–20.

In this monograph of the Polyzoa of the Northern and Arctic seas, Smitt describes at length, giving a detailed synonymy, 104 species. Many of these species contain, however, as well-marked varieties, the species of other writers on the Polyzoa. In the numbers of the 'Proceedings of the Stockholm Academy' quoted above, the descriptions of the first 62 species will be found, embracing the Polyzoa belonging to the *Cyclostomata*, *Ctenostomata*, and the first six families of the *Cheilostomata*. In compiling this monograph the author has had access to the valuable collections of Lovén, Lilljeborg, O. Torell, Malmgren, Uggla, Möller, Steenstrup, and others.

TUNICATA.

Mr. Alder records the following Tunicates as found in the Hebrides:—*Ascidia mentula*, *A. venosa*, *A. plebeia*, *A. aspersa*, *A. depressa*, *A. intestinalis*, and *A. parallelogramma*, *Molgula arenosa*, *Cynthia tessellata*, *C. squamulosa*,

C. echinata, *C. tuberosa*, *C. informis*?, *C. violacea*, *C. grossularia*, *Clavellina lepadiformis*, *Diazona hebridica*, *Parascidia flemingii*, *Didemnum gelatinosum*, *Botryllus* —— ?

Schizascus. Crosse, *l. c.* p. 105, quotes the synonymy of this genus as follows:—*Rhodosoma*, Ehrenberg, 1828; *Schizascus*, Stimpson, 1855; *Pera*, Macdonald, March 1862; *Peroides*, Macdonald, December 1862; *Chevreulius*, Lacaze-Duthiers, 1865; and gives the following list of species:—*R. callense* (Lacaze-Duthiers), Algiers; *R. verecundum*, Ehrb., Red Sea; *R. huxleyi* (Macdonald), Australia; *R. pellucidum* (Stimp.), China Sea; *R. papillosum* (Stimp.), China Sea.

M'Intosh (*l. c.*) gives an account of the anatomy of *Pelonaia corrugata*, F. & G. The specimens were taken off St. Andrews.

Cynthia condylomata, sp. n., Packard, *l. c.* p. 277, Caribou Island, 8 fathoms, on nullipores.—*C. placenta*, sp. n., Packard, *l. c.* p. 277, Straits of Belle Isle, 40 fathoms.

POLYZOA.

Phylactolæmata.

Pedicellinea. Claparède describes a new species of *Loxosoma*, under the name of *L. kefersteinii*, found in the Bay of Naples, and takes the opportunity of correcting an error that occurs in his 'Beobachtungen über Anat. der Entwickl. wirbelloser Thiere an der Küste von Normandie,' where *Loxosoma singulare* is described as varying in length from 3 to 4 millimetres, instead of being only $0^{mm}.3$ to $0^{mm}.4$ in length.

Gymnolæmata.

Cheilostomata.

Buskea, g. n., Heller, *l. c.* p. 89. This new genus possesses, like *Vincularia*, a solid, calcareous, unjointed polypstock, from which the arched ova-capsules distinctly jut out, in this latter particular resembling the genus *Farciminaria*, in which, however, the polypstock is flexible and horny. *B. nitida*, sp. n., Heller, *l. c.* p. 89, Taf. 1. figs. 2, 3: Lesina, Lissa; rare, on *Valkeria vidovici*, Hr.

Chaunosia, g. n., Busk, *l. c.* p. 240. Cells sejunct, attached apparently only by long tubular fibres. *C. hirtissima*, sp. n., pl. 36. figs. 12–16, Cape of Good Hope. Mr. Busk suggests that this is possibly the same species as that described by Heller as *Diachoris hirtissima* (*vide infrà*, p. 608).

Smitt describes in detail the following species:—

Æteidæ (*l. c.* pp. 279–281 & 294–298, pl. 16).

Ætea truncata (Lbgh.) (=*Fistularia multicornis*, Müll.?, = *Salpingia hassallii*, Coppin, =*Æteopsis elongata*, Boeck, and *Æ. argillacea*, Sm.), *Æ. anguina* (Linn.) (=*Æ. spathulata*, Lam.), and *Æ. recta* (Hincks).

Cellulariidæ (*l. c.* pp. 281–288 & 298–329, pls. 16, 17).

Eucratea chelata (Linn.).

Cellularia ternata (Sol.) (=*Sertularia reptans*, Fabr., =*Cellarina gracilis*, Van Ben., =*Mempea arctica*, Busk), *C. scabra* (Van Ben.) (=*Sertularia hale-*

cina, Fabr.,=*Cellularia scruposa*, Sars,=*Scrupocellaria delilii*, Busk), *C. reptans* (Linn.), *C. scruposæ* (Linn.), *C. peachii* (Busk).

Gencellaria loricata (Linn.).

Caberea ellisii (Flmng.) (=*Flustra setacea*, Flmng.,=*C. hookeri*, Johns. non Flmng.).

Bicellariidæ (*l. c.* pp. 288–293 & 329–357, pls. 18, 19).

Bicellaria ciliata (Linn.), *B. alderi* (Busk) (=*B. unispinosa*, Sars).

Bugula avicularia (Linn.) (=*B. flabellata*, Thomps., auctt. = *B. fastigiata*, Linn., auctt.), *B. murrayana* (Bean) (=*Eschara hispida*, Pall. ?,= *Flustra foliacea*, Fabr., = *B. quadridentata*, Lovén,= *Menipea fruticosa*, Pack.); *B. umbella*, sp. n., Smitt, *l. c.* p. 292, pl. 19. figs. 28–31, Wyde Bay, Spitzbergen (=*Kinetoskias arborescens*, Danielssen).

Beania mirabilis, Johnst.

Flustridæ (*l. c.* pp. 357–361 & 373–382, pl. 20).

Flustra membranacea, Linn., *F. chartacea* (Gmel.)(=*F. membranaceo-truncata*, Sow.), *F. securifrons* (Pall.), *F. papyrea* (Pall.), *F. foliacea* (Linn.).

Cellariidæ (*l. c.* pp. 361–363 & 383–387, tab. 20).

Cellaria articulata (Fabr.) (=*Salicornaria borealis*, Busk), *C. fistulosa* Linn.

Membraniporidæ (*l. c.* pp. 363–371 & 387–419, pl. 20).

Membranipora lineata (Linn.). This species is divided into two sections,—1. *Multispinosæ*; 2. *Paucispinosæ*. In the first we have the following quoted as synonyms—*M. craticula* (Ald.), *M. discreta* (Hincks), *M. sophiæ* (Busk) (=*Reptoflustrina arctica*, D'Orb.); and in the second, *M. unicornis* (Flmng., Ald.) (=*Flustra membranacea*, Fabr. ?) and *M. americana* (D'Orb.), *M. nitida* (Lepralia, auctt., non *Cellepora nitida*, Fabr.), *M. spinifera* (Johnst.), *M. arctica* (D'Orb.), *M. flemingii* (Busk)=*M. cornigera* (Busk), *M. trifolium* (Wood)=*M. solida*, Pack.=*M. sacculata*, Norman=*M. minax*, Busk, *M. pilosa* (Linn.)=*M. laca* (Sm.)=*M. monostachys* (Busk), *M. catenularia* (Jameson)=*M. membranacea* (Müll.).

Terebriporidæ.

Fischer (*l. c.*) proposes to arrange the genera as follows :—

a. Scruparidæ. Polyzoa free or creeping; overture oval, lateral, more or less oblique, without groove or sinus.

1. *Scruparia*, Oken (*S. chelata*, Linn.).
2. *Cateniscrupa*, Fischer (*Hippothoa catenularia*, Jameson).
3. *Ætea*, Lamouroux (*Æ. anguina*, Linn.).

β. Hippothoidæ. Polyzoa free or creeping; overture rounded, provided with a lateral scale more or less elongated.

4. *Hippothoa*, Lamouroux (*H. divaricata*, Lam.).
5. *Cercaripora*, Fischer (*Ætea truncata*, Lands., *Æ. lingulata*, Bsk.).

γ. Terebriporidæ. Polyzoa perforating; cells with a rounded overture, and furnished with a lateral scale.

6. *Terebripora*, D'Orbigny (*T. ramosa*, D'Orbigny).
7. *Spathipora*, Fischer (*S. sertum*, Fischer).

Spathipora elegans, sp. n., Fischer, *l. c.* p. 309, Chili, found on *Calyptræa radians*; *S. sertum*, sp. n., Fischer, *l. c.* p. 309, pl. 11. figs. 4 & 4 *a*, south-west of France, Arcachon, on *Lutraria elliptica* and other bivalves; *S. incerta*, sp. n.,

Fischer, *l. c.* p. 310, fossil, on *Lima semicircularis*, from Le Guettin (Cher.).

Terebripora. The following new species are described by Fischer, *l. c.*:—*T. antillarum*, p. 300, Antilles; *T. pusilla*, p. 300, China Sea; *T. reticulum*, p. 301, Indian Ocean; *T. orbignyana*, p. 301, pl. 11. fig. 2, Arcachon and Mediterranean; *T. falunica*, p. 301, fossil, Pontleroy; *T. eocenica*, p. 302, fossil, *T. archiaci*, p. 302, pl. 11. fig. 3, fossil, *T. contorta*, p. 302, fossil, Paris basin; *T. producta*, p. 303, fossil, Havre; *T. arachne*, p. 303, fossil; *T. propinqua*, p. 304, fossil.

Scrupocellaria capreolus, sp. n., Heller, *l. c.* p. 187, Taf. 1. fig. 1, Lesina; *S. inermis*, sp. n., Norman, *l. c.* p. 203, deep water in the Minch, also Shetland.

Bugula cucullata, sp. n., Busk, *l. c.* p. 240, pl. 36. figs. 1–6, Australia. Near to *B. avicularia*.

Flustra digitata, sp. n., Packard, *l. c.* p. 274, pl. 7. fig. 16, Chauteau Bay, 30 fathoms.

Diachoris simplex, sp. n., Heller, *l. c.* p. 94, Taf. 1. fig. 4, Logosta, on a nullipore, rare; *D. armata*, sp. n., Heller, *l. c.* p. 94, Taf. 1. fig. 5, on a nullipore, rare, Lesina; *D. hirtissima*, sp. n., Heller, *l. c.* p. 94, Taf. 1. figs. 6, 7, Lagosta, Quarnero.

Membranipora bifoveolata, sp. n., Heller, *l. c.* p. 95, Taf. 2. fig. 1, related to *M. coriacea* and *M. calpensis*, Lesina &c.; *M. circumcincta*, sp. n., Heller, *l. c.* p. 96, Taf. 6. fig. 5, Quarnero; *M. rostrata*, sp. n., Heller, *l. c.* p. 97, Taf. 1. fig. 9. Lesina; *M. gregaria*, sp. n., Heller, *l. c.* p. 98, Taf. 1. fig. 8, on a sponge, probably from Lagosta.

Lepralia perugiana, sp. n., Heller, *l. c.* p. 102, Taf. 2. fig. 10, near to *L. landsborovii*, Lesina; *L. kirchenpaueri*, sp. n., Heller, *l. c.* p. 105, Taf. 2. fig. 11, on the spines of *Cidaris hystrix*, Lissa, &c.; *L. botterii*, sp. n., Heller, *l. c.* p. 106, Taf. 2. fig. 4, on *Cœnocyanthus anthophyllites*, Lesina; *L. stossici*, sp. n., Heller, *l. c.* p. 107, Taf. 2. fig. 7, Lesina, on algæ; *L. appendiculata*, sp. n., Heller, *l. c.* p. 107, Taf. 2. fig. 8, on algæ, Lesina; *L. cribrosa*, sp. n., Heller, *l. c.* p. 109, Taf. 2. fig. 6, Lesina, on algæ; *L. steindachneri*, sp. n., Heller, *l. c.* p. 109, Taf. 2. fig. 5, Lesina, on algæ; *L. foraminifera*, sp. n., Heller, *l. c.* p. 110, Taf. 2. fig. 2, Lesina; *L. cornuta*, sp. n., Heller, *l. c.* p. 110, Taf. 6. fig. 6, Quarnero.

Lepralia spinifera, Johnst. Four special varieties of this species are described in detail by Heller, *l. c.* pp. 103–104.

Lepralia collaris, sp. n., Norman, *l. c.* p. 204, the Minch, Guernsey, Shetland, Antrim; *L. crystallina*, sp. n., Norman, *l. c.* p. 204, the Minch and Shetland.

Cellepora hincksii, sp. n., Heller, *l. c.* p. 113, Lesina, Lissa; *C. corticalis*, sp. n., Heller, *l. c.* p. 113, Lesina.

Eschara pallasii, sp. n., Heller, *l. c.* p. 115, Taf. 3. figs. 1, 2, Lissa, Lagosta; *E. tubulifera*, sp. n., Heller, p. 116, Taf. 3. figs. 3, 4, Lissa, Lagosta.

Eschara papposa, sp. n., Packard, *l. c.* p. 275, pl. 7. fig. 17, Chauteau Bay, often with *Flustra digitata*, Pk.

Eschara quincuncialis, sp. n., Norman, *l. c.* p. 204, deep water in the Minch.

Cyclostomata.

Smitt (*l. c.*) records the following species; detailed descrip-

tions are given of each species, with its synonymy, distribution in the northern seas, and depth at which it lives :—

Crisiæ (*l. c.* pp. 115–140, pl. 16). *Crisia eburnea*, Linn., and as var. *C. cornuta* (Linn.), *C. producta* (Sm.), *C. eburnea* (Linn., auctt.), and *C. denticulata* (Lam.).

Diastoporidæ (*l. c.* pp. 395–398 & 415–434, pl. 8). *Diastopora repens* (Wood); *D. simplex* (Busk); *D. hyalina* (Flmng.), and, as var., *D. obelia* (Johnst.) and *D. latomarginata* (D'Orb.); *D. patina* (Lam.).

Mesenteripora meandrina (Wood).

Tubuliporidæ (*l. c.* pp. 398 & 404–465, pls. 3–6, 9, 10). *Tubulipora (Idmonea) atlantica* (Forbes); *T. (I.) fenestrata* (Busk); *T. (I.) serpens* (Linn.), and, as var., *T. lobulata* (Hass.); *T. (Phalangella) palmata* (Wood) (= *Alecto dilatans*, Busk); *T. (P.) fimbria* (Lam.) (= *Tubipora serpens*, Fabr., = *T. flabellaris*, Johnst., auctt.); *T. (P.) flabellaris* (Fabr.) (= *T. verrucosa*, M.-Edw., = *T. phalangea*, Johnst.); *T. (Proboscina*, Aud., = *Penciletta*, Gray) *incrassata* (D'Orb.) (= *T. ventricosa*, Busk, = *Alecto granulata*, auctt.); *T. (P.) fungia* (Couch) (= *T. penicillata*, Johnst.); *T. penicillata* (Fabr.) (= *Defrancia striatula*, Busk).

Hornerida (*l. c.* pp. 404 & 465–474, pls. 6, 7). *Hornera violacea* (Sars), and, as var., *H. proboscina* (Sm.); *H. lichenoides* (Linn.) (= *H. borealis*, Busk).

Lichenoporidæ (*l. c.* pp. 405–406 & 474–487, pls. 10, 11). *Discoporella verrucaria* (Linn.): *a.* forma *verrucaria* (Fabr.) = *D. floseulus*, Hincks; *b.* forma *crassiuscula* (Sm.) = *D. grignonensis*, Busk, = *Defrancia rugosa*, id. ?; *c.* forma *hispida* (Flmng.) = *Heteroporella radiata*, Busk.

Frondiporidæ (*l. c.* pp. 407 & 487–489). *Frondipora verrucosa* (Lmrx.).

Corymboporidæ (*l. c.* pp. 407 & 489–496, pl. 11). *Corymbopora fungiformis*, sp. n., Smitt, *l. c.* p. 407, pl. 11. figs. 13, 14, Hammerfest.

Coronopora truncata (Jameson).

Defranciadæ. *Defrancia lucernaria* (Sars).

New species :—

Crisia attenuata, Heller, *l. c.* p. 117, Taf. 4. figs. 1, 2, Lesina; *C. fistulosa*, Heller, *l. c.* p. 118, Taf. 3. fig. 5, Lissa, &c.; *C. recurva*, Heller, *l. c.* p. 118, Taf. 4. figs. 3, 4, Lesina.

Idmonea serpula, Heller, *l. c.* p. 120, Taf. 3. figs. 8, 9, Lesina; *I. meneghinii*, Heller, *l. c.* p. 120, Taf. 3. figs. 6, 7, Lesina, Lissa; *I. triforis*, Heller, *l. c.* p. 120, Lesina.

Discosparsa annularis, Heller, *l. c.* p. 123, Quarnero, on *Myriozoon truncatum*.

Alecto parasita, *l. c.* p. 125, Taf. 3. fig. 10, Lissa, on *Eschara cervicornis*.

Alecto compacta, Norman, *l. c.* p. 204, deep water in the Minch and Shetland. Near to *A. dilatans*.

Tennysonia, gen. nov., Busk, *l. c.* p. 242. Polyzoary arising from a rather thick central base (substipitate), lobate, stelliform; lobes curved, with a median angle; tubes wholly immersed; orifices disposed in straight lines, extending from the median angle to the denticulate margin of the lobes; interspaces cancellous. *T. stellata*, Cape of Good Hope, parasitic upon *Onchopora tubulosa*, pl. 36. figs. 10, 11.

Ctenostomata.

Smitt gives detailed descriptions of the following species :—

Halcyonellidæ (*l. c.* pp. 496–500 & 506–518, pl. 12). *Alcyonidium* (Lmrx.). 1st subg. *Halodactylus* (Farre) : *A. mytili* (Dalyell), *A. hirsutum*. 1. *Zooœcia hexagona* : *a.* formæ incrustantes—*a.* forma *A. lineare* (Hincks), *b.* forma *A. mammillata* (Alder) (= *Sarcochitum polyoum*, Hass.?) : *β.* forma erecta—*c. A. hirsuta* (Flmng., auctt.). 2. *Zooœcia ampulliformia* ; *d. A. albida* (Alder), *A. gelatinosum* (Linn.).—2nd subg. *Cycloum* (Hass.) : *A. parasiticum* (Flmng.), *A. papillosum* (Hass.), *A. hispidum* (Fabr.) (= *Flustra cornuta*, M.-Edw.).

Vesiculariidæ (*l. c.* pp. 500–503 & 518–526, pl. 13). *Vesicularia* (Thomps.). 1st subg. *Valkeria* (Flmng.) : *V. uva* (Linn.) (= *Bowerbankia densa*, Farre), *V. cuscuta* (Linn.) (= *Farrella repens*, Sars ?). 2nd subg. *Farrella* (Ehrbg.) : *V. familiaris* (Gros) (= *Cordyle cristallina*, Boeck, = *Farrella gracillima* (Sars). 3rd subg. *Arenella* (Dalyell) : *V. fusca* (Dal., Busk) (= *Farrella gigantea*, Busk ?).

Valkeria vidovici, sp. n., Heller, *l. c.* p. 128, Taf. 5. figs. 3, 4, on zoophytes and seaweeds, Lesina ; *V. tuberosa*, sp. n., Heller, *l. c.* p. 129, Taf. 6. fig. 4, Lesina.

Mimosella gracilis, Hincks, is recorded by Heller, *l. c.* p. 128, as found at Lesina and Cape Cesto.

CRUSTACEA

BY

EDUARD VON MARTENS, M.D., C.M.Z.S.

Review of Publications.

BERGH, R. *Ismaila monstrosa.* Naturhistorisk Forenings videnskabelik Meddelelser, Kjöbenhavn, 1866, Nos. 7–9, pp. 110–125, with a plate. Also published separately (1867), together with "*Phidiana lynceus.*"

CLAPARÈDE, E. Sur un crustacé parasite de la *Lobularia digitata.* Ann. Sc. Nat. 5th series, vol. viii. 1867, pp. 23–28, with a plate.

DOHRN, A. Zur Naturgeschichte der *Caprella.* Zeitschr. f. wiss. Zool. xvi. 1866, pp. 245–252, pl. 13.

——. Die embryonale Entwicklung des *Asellus aquaticus.* Zeitschr. wiss. Zool. xvii. pp. 221–278, with 2 plates.

EDWARDS, MILNE-E. Descriptions de quelques espèces [et genres] nouvelles de Crustacés Brachyures. Annales de la Société Entomologique de France, vol. vii. 1867, pp. 263–288.

HESSE, M. Observations sur des Crustacés rares ou nouveaux des côtes de France.—Onzième article. Mémoire concernant deux Crustacés nouveaux trouvés parmi des Balanes et des Anatifes. Ann. d. Sc. Nat. 3e série, vol. vii. pp. 123–152, pls. 2 & 3.—Douzième article. Mémoire sur les nouveaux genres *Oiceobathe, Uperogcos,* and *Sunariste.* Ibid. pp. 199–216, pl. 4.—Quatorzième article *. Description de deux Sacculinidiens, d'un Peltogastre, d'un Pelychliniophile et de deux Cryptopodes nouveaux. Ibid. viii. pp. 377–381.

KLUNZINGER, —. Ueber *Branchipus rubricaudatus,* nov. sp. Zeitschr. wiss. Zool. xvii. pp. 23–33, with a plate.

MÖBIUS, KARL. Ueber die Entstehung der Töne, welche *Palinurus vulgaris* mit den äussern Fühlern hervorbringt. [On the origin of the sounds produced by *P. v.* by means of the outer antennæ.] Archiv für Naturgeschichte, xxxiii. pp. 73–75, with figures.

* There is no thirteenth part.

Müller, Fritz. Ueber *Balanus armatus* und einen Bastard dieser Art und des *Balanus improvisus*, var. *assimilis*. Archiv für Naturgeschichte, xxxiii. pp. 329–356, plates 7–9.

Norman, A. M., and Brady, G. S. A Monograph of the British Entomostraca belonging to the families *Bosminidæ*, *Macrothricidæ*, and *Lynceidæ*. Natural-History Transactions of Northumberland and Durham, vol. i. part 3, 1867, pp. 354–408, with six plates. [Also as separate publication.]

Packard, A. S., jun. Observations on the Glacial Phenomena of Labrador and Maine, with a view of the recent invertebrate fauna of Labrador. Memoirs of the Boston Society of Natural History, vol. i. part 2, 1867, pp. 210–303, with 3 plates, 4to [pp. 295–303 and pl. 8 contain the observations on Crustacea].

Sars, G. O. Histoire naturelle des Crustacés d'eau douce de Norvége. Première livraison. Les Malacostracés. Christiania, 1867, 4to, pp. 146, with 10 plates.

Schramm, Alph. Crustacés de la Guadeloupe, d'après un manuscrit du Dr. Isis Desbonne, comparé avec les échantillons de Crustacés de sa collection. Première partie, *Brachyures*. Basse-Terre, imprimerie du gouvernement, 8vo, pp. 65, with 8 plates of photographs.

The Recorder has not seen either this or the following paper.

——. Catalogue des Coquilles et des Crustacés de la Guadeloupe, envoyés a l'Exposition universelle de 1867. Basse-Terre, imprimerie du gouvernement, 8vo, pp. 27.

Contributions to Faunas.

Black Sea. J. Marcusen gives a preliminary list of the Crustacea of the Black Sea, containing 22 Decapods, 27 Tetradecapods, and some Ostracoda and Copepoda. He directs attention to some similarities to the faunæ of more northern seas, principally with regard to the rather large number of *Cumacea* and species of the genus *Mysis*, further the presence of the genus *Bathyporeis* among Amphipoda. *Iæridina* appears to be a genus peculiar to the Black Sea. The larger species of Decapods, however, are Mediterranean, although the author terms them "rather cosmopolitan." Arch. f. Naturgeschichte, xxxiii. pp. 358–363.

Labrador. A. S. Packard enumerates the following species as inhabitants of Labrador (Mem. Bost. Soc. Nat. i. 2. p. 298):—

Nymphon grossipes.

Coronula diadema, Balanus crenatus, balanoides, porcatus.

Peltogaster paguri.

Lernæa branchialis, Daphnia, sp., *Cypridina excisa, Branchipus paludosus, Nebalia bipes.*

Bopyrus mysidum, n. sp., *Æga*, sp., *Tanais filum, Praniza cerina, Jæra nivalis, Asellus grönlandicus, Idotæa marmorata.*

Caprella septentrionalis.

Themisto, sp., *Hyperia medusarum, Dulichia porrecta, Cerapus rubroformis, Amphitoë maculata, Gammarus locusta* and *dentatus, Paramphitoë panopla, Calliope læviuscula, Amphitonotus edwardsii* and *cataphractus, Atylus vulgaris* and *inermis, Monoculodes nubilatus*, n. sp., *Ampelisca gaimardi, pelagica*, and *eschrichtii, Haploops tubicola, Pontoporeia femorata, Anonyx ampulla, lagena, hörringii*, and *producta* [-*us*], *Lysianassa appendiculata.*

Alauna goodsiri, Mysis oculata, Pandalus annulicornis, Hippolyte aculeata, polaris, phippsii, turgida, macilenta, sowerbyi, gaimardi, and *fabricii, Argis lar, Sabinea septemcarinata, Crangon boreas* and *vulgaris, Homarus americanus, Eupagurus pubescens* and *kröyeri, Hyas coarctata* and *aranea, Chionœcetes opilio, Cancer borealis.*

Lupa diacantha (Say) caught in a mill-pond, Massachusetts. American Naturalist, i. p. 52.

Madeira. Some remarks on its carcinological fauna are given by the Recorder in Preuss. Expedition nach Ostasien, Zool. i. pp. 12–14. Species of *Porcellio* and *Armadillidium* are common; *Gammarus* is often found on the banks of rivulets above the water; *Asellus aquaticus* (L.); two species of *Grapsus* are seen on the stones of the sea-shore, also often out of the water; *Plagusia squamosa* (Herbst) is esteemed as food.

Sargasso Sea. A list of animals found hitherto in the floating weed of the the Atlantic Ocean between 19° and 45° N. lat., containing 14 species of Crustacea, is given by G. von Martens, Preuss. Exped., Botanical section, Tange [Fuci], pp. 9–11. The most remarkable are *Lupa sayi* (Gibbes), *Planes minutus* (L.), and some species of *Hippolyte* and *Palæmon.*

Guadeloupe. Eighty-five species of Brachyura from this island are said to be described in the work of A. Schramm (see the preceding page).

Rio Janeiro. Eriphia gonagra (Fabr.) and *Uca una* observed in brackish water, with *Gelasimus* &c.; *Lupa diacantha* (Latr.) and *Peneus setifer* (L.) very common in the market. Martens, *l. c.* p. 38.

Japan and *China.* Some notes on Crustacea are published in the Official Report of the Prussian Expedition to Eastern Asia, Zoological section, vol. i. *Thelphusa berardi* (De Haan), *Sesarma quadrata*, and *hæmatochir* (De Haan) live on the banks of freshwater rivulets, more out of than in the water, pp. 132, 133; a species of *Orchestia* on decayed moist leaves, far from any pond or river, p. 130; in the freshwater ponds species of *Palæmon, Gammarus*, and even *Sphæroma*, but no *Astacus* have been seen by the Recorder, p. 133; *Lupa pelagica* almost daily in the market of Yokohama and other places in Eastern Asia; *Palinurus trigonus, japonicus* (De Haan), and *Macrocheira kämpferi* were brought by fishermen during the winter; *Limulus* and *Dorippe* are figured in the Japanese Encyclopædia with the Japanese names, p. 142; *Lupa pelagica, Eriocheir*, sp., *Helice tridens* (De Haan), and species of *Palæmon* in the market of Shanghai, p. 159; *Thalamita callianassa* (Herbst), *Varuna literata* (Fabr.), and *Alpheus neptunus* (Dana) have been caught in the open South China sea, the two latter clinging to pieces of floating wood, pp. 55 & 57; *Myra fugax*, in the same sea, on muddy ground, in 40 fathoms, p. 56.

DECAPODA.

BRACHYURA.

Oxyrhyncha.

Mithrax spinifrons, sp. n., A. Milne-Edwards, Ann. Soc. Entomol. France, vii. p. 263, Navigator's Islands.

Mimulus acutifrons, sp. n., A. Milne-Edwards, *l. c.* p. 264, locality unknown. (The genus was established by Stimpson, Ann. Lyc. Nat. Hist. N. York, 1860.)

Cyclometopa.

Cancridæ.

Actumnus nudus, sp. n., A. Milne-Edwards, Ann. Soc. Entomol. de France, vii. p. 265, Pondicherry.

Xantho bidentatus [*-a*], Sandwich Islands, *nudipes*, Seychelles and New Caledonia, *crassimanus* [*-a*], New Caledonia, *pilipes*, Senegal, are new species described by Milne-Edwards, *l. c.* pp. 266–268.

Xanthodes pachydactylus, sp. n., A. Milne-Edwards, *l. c.* p. 268, New Caledonia.

Cyloxanthus [*Cyclo-*?] *lineatus*, sp. n., A. Milne-Edwards, *l. c.* p. 269, New Caledonia. (The genus was formed in 1864; typical species *C. sexdecimdentatus*, Lucas.)

Medaus elegans and *nodosus*, spp. nn., A. Milne-Edwards, *l. c.* pp. 270, 271, New Caledonia; the first nearly allied to Herbst's *Cancer ochthodes*.

Zozymus pilosus, sp. n., A. Milne-Edwards, *l. c.* p. 271, New Caledonia.

Lophozozymus cristatus, *actæoides*, and *pulchellus*, spp. nn., A. Milne-Edwards, *l. c.* pp. 272, 273, New Caledonia. (The genus was established by the same author in 1865, and includes the *Xantho incisus* and *octodentatus* of Milne-Edwards, Hist. Nat. Crust., as well as *superbus*, Dana.)

Menippe leguilloui, Indian sea, and *M. granulosa*, Batavia, spp. nn., A. Milne-Edwards, *l. c.* pp. 274, 275.

Heterozius, g. n., A. Milne-Edwards. Carapace rounded in front, much depressed. Forehead narrow, produced. Basal joint of the outer antennæ not reaching the forehead. Third joint of the maxillipeds very small, narrowed in front. Endostome not canaliculated. Abdomen divided into five segments. *H. rotundifrons*, sp. n., New Caledonia, *l. c.* 275.

Panopeus africanus, sp. n., A. Milne-Edwards, *l. c.* p. 276, Gaboon and Angola.

Eurycarcinus, g. n., A. Milne-Edwards, allied to *Eurytium*, but differing by the abdominal segments being free in the male.—*E. grandidierii*, Zanzibar, and *E. orientalis*, Bombay, spp. nn., A. Milne-Edwards, *l. c.* pp. 276, 277.

Pilumnopeus maculatus, Zanzibar, and *P. crassimanus*, Port Western, Australia, spp. nn., A. Milne-Edwards, *l. c.* pp. 277, 278.

Pseudozius sinensis, sp. n., A. Milne-Edwards, *l. c.* p. 278, coast of China.

Epixanthus helluo, sp. n., A. Milne-Edwards, *l. c.* p. 278, Senegal and Gaboon.

Pilumnus africanus, Gorea and Angola, *P. ovalis*, Sandwich Islands, *P. deflexus*, Australia, spp. nn., A. Milne-Edwards, *l. c.* pp. 280, 281.

Rüppellia granulosa, sp. n., A. Milne-Edwards, *l. c.* p. 279, Mangareva.

Rüppellioides, g. n., A. Milne-Edwards, *l. c.* p. 280. Suborbital lobe not united with the forehead, basal joint of the outer antennæ very developed, prolonged to between the suborbital lobe and the forehead, so that the base of its flagellum lies within the orbit. *R. convexus*, sp. n., New Zealand.

Eriphiidæ.

Trapezia acutifrons and *latifrons*, spp. nn., A. Milne-Edwards, *l. c.* p. 281, Sandwich Islands.

Portunidæ.

Lupa sayi (Gibbes), the crab of the Sargasso sea; its difference from the allied *L. sanguinolenta*, and the various names which have been given to it, mentioned by E. von Martens, Preussische Expedition nach Ostasien, Botanischer Theil, Die Tange [Fuci], p. 9.

Goniosoma helleri, sp. n., A. Milne-Edwards, *l. c.* p. 282,=*G. orientale* of Heller, Exped. Novara (Record, ii. p. 315), not of Dana, New Caledonia and Nicobar Islands.

Catometopa.

Gecarcinidæ.

Gecarcinus ruricola is said in Cuba to be poisonous; *Cardisoma guanhumi* and *Lupa diacantha* are eaten in great quantities, but also said to be sometimes unwholesome. Poey, Repert. fisico-nat. de Cuba, tom. ii. p. 24.

Pinnotheridæ.

Pinnotheres fischerii, sp. n., A. Milne-Edwards, Ann. Soc. Entomol. de France, vii. p. 287, New Caledonia.

Gonoplacidæ.

Macrophthalmus grandidierii, Zanzibar, *inermis*, Sandwich Islands, and *lævis*, Indian sea, spp. nn., A. Milne-Edwards, Ann. Soc. Entomol. de France, vii. pp. 285–287.

Libystes, g. n., A. Milne-Edwards. Near *Cleistostoma*. Third joint of the outer maxillipeds much dilated at their antero-exterior angle, as in some *Portunidæ*. Last joint of the first three ambulatory feet styliform, that of the last compressed and ciliated on its edges. "Cadre buccal" very large in front. Basilar joint of the antennæ not joined to the forehead. One species, *L. nitidus*, sp. n., Zanzibar, A. Milne-Edwards, Ann. Soc. Entomol. de France, vii. p. 285.

Grapsidæ.

Metopograpsus pictus, sp. n., A. Milne-Edwards, *l. c.* p. 283, New Caledonia.

Discoplax, g. n., A. Milne-Edwards. Carapace rounded in front. Forehead much deflexed, narrow, its edge straight. Lateral edges regularly arched in front, with one tooth behind the angle of the orbit. Orbits large, with a notch on the outer side. Basal joint of the outer antennæ very small, not reaching the forehead. Epistome narrow. Endostome not canaliculated. Third joint of the outer maxillipeds elongate, truncate on its fore part for the

insertion of the following joint, rounded at its inner edge. Anterior feet well developed, equal; ambulatory feet remarkably long, those of the second pair longest. Abdomen of the male with seven segments. One species, *D. longipes*, sp. n., New Caledonia, A. Milne-Edwards, Ann. Soc. Entomol. de France, vii. p. 284.

Plagusia squamosa (Herbst), at Madeira. According to other authors, it lives also in the Indian Ocean; but perhaps it has been mistaken for *Pl. orientalis* (M.-E.). Martens, Preuss. Exped. Zool. i. pp. 14 & 23.

MACRURA.

Palinurus vulgaris produces a crackling sound by rubbing the base of the larger antennæ against the fixed ring piece to which the first moveable joint of these antennæ is articulated. On the upper and inner surface of that moveable joint there is a hollow covered with a membrane which is partly beset with hairs, partly without them, and provided with parallel furrows. On the surface of the ring piece, against which this membrane is rubbed, faint scratches may be seen, which, without doubt, are caused by those hairs. The sound is only produced when the rubbing is done in a direction contrary to the hairs. The elasticity of the hairs yielding to the pressure for minute intervals of time produces the intermittent movements which are the real cause of the sound. Möbius, Arch. f. Naturgeschichte, xxxiii. pp. 73–75, pl. 2. figs. 1, 2.

Astacus fluviatilis (auct.) in some streams of the south-eastern part of Norway, probably introduced from Sweden. G. O. Sars, Crust. d'eau douce de Norvége, p. 11.

SCHIZOPODA.

The analogies of this division (called legion by the author) with some genera of normal Macrura, as *Peneus*, *Pasiphaë*, and with earlier stages of development in other genera, are pointed out by G. O. Sars; he thinks they ought to be regarded as Decapods which remain on a lower stage of development than the rest of the order. Sars, *l. c.* pp. 11, 12.

Mysis oculata (Fabr.), var. *relicta* (Lovén). Its external forms, as well as its anatomy, are described and figured by G. O. Sars, *l. c.* pp. 14–41, pls. 1–3. The heart is in the same situation as in Decapods generally, but is very elongate; only the large arteries are real vessels, their branches being merely interstitial currents in the mass of other organs. Instead of distinct gills, there are, under the cephalothorax at the bases of the feet, six peculiar organs, forming flexuous cylindrical tumours of the sides of the body, containing blood, and communicating with the lateral slits of the heart; they are homologous with the branchial vessels of Decapods, but are here peculiarly developed, so as to perform the function of gills. The cerebral ganglia are more numerous than in other Decapods; the eyes are more developed than in most of the higher Decapods. The division of the nervus opticus into three segments within the eye-stalk and its final termination are described in detail, also the auditory organ in the internal lateral lamina of the caudal fan. Several bristles on the stalks of the upper antennæ, on the abdominal feet, and on the caudal lamina are thought by the author to perform also an auditory function, but more simple and more imperfect; the first of them are the same as the auditory cilia observed by Spence Bate in the Amphipods,

and regarded as olfactory organs by others. The animal lives in the lake Mjösen from 3 and 6 to 200 fathoms, and is gregarious, as other species of the same genus; it lives also in several large lakes of Sweden, and in Lake Ladoga. It cannot be distinguished as a separate species from the marine *Mysis oculata* from Greenland.

TETRADECAPODA.

AMPHIPODA.

Gammarus neglectus (Lilljeborg)=*lacustris* (Sars, 1863), in the mountain-lakes of Norway, for example Afsjö and Vaalasjö on the Dorrefjeld, the principal food of *Salmo fario*; its external and anatomical characters described by G. O. Sars, *l. c.* pp. 46, 47, pls. 4, 5, and 6. figs. 1–20. The copulation and development of the eggs has been observed by the author, and the existence of a micropylic apparatus discovered and described, p. 65.

Pallasea cancelloides (Gerstfeldt, Sp. Bate), var. *quadrispinosa* (Esmark), from the lake Mjösen and others in Norway, described and figured by G. O. Sars, *l. c.* pp. 68–73, pl. 6. figs. 21–34.

Gammaracanthus loricatus (Sabine), var. *lacustris*, from the same lake, only in a depth of nearly 1200 feet; adult and young states described and figured by G. O. Sars, *l. c.* pp. 73–82, pl. 7. figs. 1–8. The slight differences from the arctic marine *G. loricatus* are attributed by the author, as by Lovén, to arrested development.

Pontoporeia affinis (Lindström)=*femorata*, var. (Sars, 1862), in small lakes near Christiania, described and figured by G. O. Sars, *l. c.* pp. 82–90, pl. 7. figs. 10–25, pl. 8. figs. 1–5. The genus *Pontoporeia* is reunited with *Lysianassa* by the author, p. 82, note.

Pontoporia femorata (Kröyer), Packard, Mem. Bost. Soc. Nat. Hist. i. p. 300, pl. 8. fig. 7, Belles Amours, Straits of Belle Isle, Labrador.

Monoculodes nubeculatus, sp. n., Packard, *l. c.* p. 298, pl. 8. fig. 4, Caribou Island, Labrador.

Calliope læviuscula (Kröyer), Packard, *l. c.* p. 298, pl. 8. fig. 2 (front leg), Labrador.

Atylus inermis (Kröyer), Packard, *l. c.* p. 298, pl. 8. fig. 3, Henley Harbour, Labrador.

Ampelisca gaimardi (Bate, fide Beck), Packard, *l. c.* p. 299, pl. 8. fig. 1, Chateau Bay, Labrador.

ISOPODA.

IDOTEIDÆ.

Idotæa marmorata, sp. n., Packard, Mem. Bost. Soc. Nat. Hist. i. p. 296, pl. 8. fig. 6, Sloop Harbour, Kynetarbuck Bay, Labrador.

ASELLIDÆ.

Asellus aquaticus. Common in pools and marshes of Norway, even in those drying up during the summer, in which case it remains in the mud in a torpid state. Its external forms, anatomy, and development from the egg are described and figured by G. O. Sars, *l. c.* pp. 93–123, pl. 8. figs. 6–28, pls. 9 and 10.

The development of *Asellus aquaticus* has been made the subject of researches by Dr. A. Dohrn, Zeitschr. wiss. Zool. xvii. pp. 271–278, pls. 14 & 15.

Oniscidæ.

Armadillo cacahuamilpensis, sp. n., Bilimek, Vehandl. zool.-bot. Gesellsch. Wien, xvii. p. 907, Cave of Cacahuamilpa, Mexico.

Bopyridæ.

Bopyrus mysidum, sp. n., Packard, Mem. Bost. Soc. Nat. Hist. i. p. 295, pl. 8. fig. 5, Labrador.

Two young apparently new Crustacea, one living among *Balanus sulcatus*, the other among *Anatifa vulgaris*, are described by E. Hesse in several stages of their development, Ann. Sc. Nat. xvi. pp. 121–152, pl. 2. figs. 9–27, and pl. 3. figs. 1–26. He points out some resemblances between them and the younger states of the Cirripeds among which they live, and thinks that they may belong to the division of *Isopoda sedentaria* (*Bopyridæ*), forming a link between this division and the Cirripeds. As the full-grown animals are not yet known, he does not give a name to them, nor anything like a generic definition.

BRANCHIOPODA.

PHYLLOPODA.

Branchipus rubricaudatus, sp. n., Klunzinger, Zeitschr. wiss. Zool. xvii. 1. pp. 23–33, fully described and figured on plate 4, found in water-reservoirs at Kosseir, Red Sea, some time after the rains in winter.

Branchipus stagnalis and *Apus cancriformis* observed near Vienna by Grunow, Abhandl. geolog. Reichsanstalt Wien, 1867, Feb.

CLADOCERA.

The monograph of British Entomostraca by Norman and Brady is introduced by a short critical review of the memoirs and works published since Dr. Baird's 'Natural History of the British Entomostraca.' Then the authors proceed to the description of genera and species. Only fifteen of the thirty-three species described in this memoir as British are found in Dr. Baird's work; twenty-eight of them have been found by the authors themselves within the counties of Northumberland and Durham; one species is quite new. The system adopted by them is that of G. O. Sars.

The following are acknowledged as British species, fully described, and most of them illustrated by very good figures:—

Bosminidæ (Sars).

Bosmina (Baird) *longirostra* (Müll.), pl. 22. fig. 4; *longispina* (Leydig), pl. 22. figs. 1, 2=*obtusirostris* (G. O. Sars); *coregoni* (Baird), pl. 22. fig. 3=*lilljeborgii*, G. O. Sars, only in Lochmaben Castle Loch, Dumfriesshire.

Macrotrichidæ = *Lyncodaphnidæ* (Sars).

Macrothrix (Baird) *laticornis* (Jurine), pl. 23. figs. 4, 5=*curvirostris* (S. Fischer); *hirsuticornis*, sp. n., pl. 23. figs. 6, 7, Ashburn, Sunderland; *rosea* (Jurine), pl. 23. figs. 1–3.

Drepanothrix (G. O. Sars) *hamata* (G. O. Sars), pl. 22. figs. 5–7=*sentigera* of the same author.

Lathonura (Lilljeborg) *rectirostris* (Müll.), pl. 23. figs. 8–12=*brachyura* (Zaddach)=*mystacina* (S. Fischer)=*lacustris* (Leydig).

Acantholeberis (Lilljeborg) *curvirostris* (Müll.).

Ilyocryptus (G. O. Sars) *sordidus* (Norman).

Lynceidæ.

Lynceus (Müll.), including *Chydorus*, *Camptocercus*, *Acroperus*, *Pleuroxus*, *Poracantha*, *Alonella*, *Graptoleberis*, *Harporhynchus*, *Alonopsis*, and *Rhypophilus* of recent authors; *L. harpæ* (Baird), pl. 21. fig. 1,=*leucocephalus* (Koch) =*striatus* (Lilljeborg); *L. macrourus* (Müll.), pl. 20. fig. 6, and pl. 21. fig. 2, including *Camptocercus macrourus*, *lilljeborgi*, *rectirostris*, and *biserratus* of Schödler; *L. elongatus* (G. O. Sars), pl. 18. fig. 1, and pl. 24. fig. 2,=*macrourus* of Lievin and Leydig=*Acroperus intermedius* (Schödler); *L. tenuicaudis* (G. O. Sars), pl. 19. fig. 3,=*Camptocercus alonoides* (Schödler)=*Alona camptocercoides* (Schödler); *L. quadrangularis* (Müll.), pl. 21. fig. 5,=*affinis* (Leydig); *L. costatus* (G. O. Sars), pl. 18. fig. 2, and pl. 21. fig. 7; *L. guttatus* (G. O. Sars), pl. 18. fig. 6, and pl. 21. fig. 10; *L. testudinarius* (Fischer), pl. 18. fig. and pl. 21. fig. 4,=*reticulatus* of Lilljeborg=*Alona esocirostris* (Schödler) *L. reticulatus*, Baird; *L. exiguus* (Lilljeborg), pl. 18. fig. 3, and pl. 21. fig. 3, =*excisus* (Fischer); *L. acanthocercoides* (Fischer), pl. 19. fig. 5, and pl. 21. fig. 7, =*quadrangularis* of Leydig=*Alona leydigii* (Schödler); *L. falcatus* (G. O. Sars), pl. 18. fig. 4, and pl. 20. fig. 1; *L. truncatus* (Müll.), pl. 21. fig. 9; *L. lævis* (G. O. Sars), pl. 18. fig. 4, and pl. 21. fig. 14,=*trigonellus* of Zaddach, but not of other authors,=*Pleuroxus ornatus* (Schödler)=*Pl. hastatus* (G. O. Sars); *L. trigonellus* (Müll.), pl. 21. fig. 11,=*Pl. hamatus* (Baird), which is the female, =*aculeatus* (Fischer)=*Pl. aduncus* and *Pl. bairdii* (Schödler); *L. uncinatus* (Baird), pl. 18. fig. 9, and pl. 21. fig. 13,=*personatus* (Leydig)=*Rhypophilus glaber* (Schödler); *L. rostratus* (Koch), pl. 19. fig. 1, and pl. 21. fig. 6,=*griseus* (Fischer)=? *Alona ovata* (Baird); *L. nanus* (Baird), pl. 18. fig. 8, and pl. 21. fig. 8,=*Alona pygmæa* (G. O. Sars)=*Pleuroxus transversus* (Schödler); *L. globosus* (Baird), pl. 20. fig. 5,=?*Chydorus calatus* (Schödler); *L. sphæricus* (Müll.), pl. 21. fig. 12.

Eurycercus (Baird) *lamellatus* (Müll.), pl. 20. fig. 8,=*laticaudatus* (L. Fischer), perhaps the commonest member of the family.

Monospilus (G. O. Sars) *tenuirostris* (Fischer), pl. 19. fig. 2, and pl. 20. fig. 9, =*M. dispar* (G. O. Sars). Valves composed of many plates overlapping each other, the smallest not half the size of the largest. There have occurred specimens of *Lynceus elongatus* in which the carapace consisted of a series of valves lying in a similar manner one over another, but being all of nearly the same size—the regular moulting having been made, but the old valves not having been cast off, from some unknown cause.

Anchistropus (G. O. Sars) *emarginatus* (G. O. Sars), pl. 19. fig. 4, and pl. 20. fig. 4, Paisley Canal, near Glasgow.

COPEPODA.

Sunaristes, g. n. Body much elongate, fusiform, composed of 5 thoracic and 6 abdominal segments; cephalothoracic shield larger than all the other thoracic segments together; the second abdominal segment likewise larger than the others, the last terminating in two flat divergent appendages bordered with long rigid hairs. Frontal appendix articulated, rounded at the end and hollow in the middle on the upperside. Antennæ thick, fusiform, consisting, in the female, of ten joints, pectinated by bristles, and terminating in hairs; in the male terminating in a subprehensile hand with a very strong claw. Jaws corneous, armed with strong teeth; upper and lower maxillipeds strong, bordered with hairs and spines. Thoracic feet consisting of two branches, bordered with bristles, and in the male also some spines. Allied to the genus "*Herpaticus*" [*Harpacticus*?]. Only one species, *S. paguri*, sp. n., Brest, with hermit-crabs in shells. Hesse, Ann. Sc. Nat. vii. pp. 205 and 215, pl. 4. figs. 11–25.

[We have given the characters of the two genera *Uperogcos* and *Sunaristes*, as far as possible, in the words of the author.]

Anomalocera. In the open sea of the Atlantic; blue, when alive, with a central yellow blotch, which becomes red in spirits. Martens, Preuss. Exped. Zool. i. p. 32.

*Uperogcos**, g. n., Hesse, Ann. Sc. Nat. vii. p. 203. Head small, flat, placed on a sort of neck. Antennæ simple, slender, equally divided into ten joints. Body swollen, very convex on the side of the back. Thorax divided into four segments. Mouth conical, surrounded by very strong maxillipeds, which are armed with claws. Thorax composed of 4 segments. Thoracic feet two-branched, armed with hairs and spines. First pair small, terminating in four claws [the figure shows three terminal claws and a fourth at the end of the joint before the last]. Abdomen cylindrical, retractile, composed of six segments, the last terminating in flat and divergent appendices, ending in long, flexible hairs. Allied to the genus *Doropygus*. Only one species, *U. testudo*, sp. n., Brest, on *Cystoseira fibrosa*, very lively. Hesse, Ann. Sc. Nat. vii. pp. 203 and 215, pl. 4. figs. 7–10.

Ismaïla, g. n., Bergh, *l. c.* Fœmina: Cephalothorax distinctus. Duo antennarum paria; antennæ priores minutæ; posteriores paulo majores, prensoriæ. Abdomen supra in tria segmenta divisum, ultimum in appendicem erectam productum; segmenta omnia utroque latere in brachium elongata; duo priora segmenta inferiore pagina, pedum abdominalium loco, duobus paribus brachiorum inter se similibus prædita. Cauda elongata, apice solum articulata, ultimo segmento appendicibus caudalibus brevissimis setigeris. The male is unknown. Next to *Notodelphys*. The new species, *I. monstrosa*, Bergh, is described and figured pl. 4. figs. 1–6 (cop. in Ann. & Mag. Nat. Hist. 1868, ii. pl. 1. figs. 18–22); it has been found in the abdominal cavity of a new Nudibranchiate mollusk from St. Thomas, West Indies, *Thidiana lynceus*.

Argulus (subg. *Agenor*, Risso) *dactyloptcri*, sp. n., Thorell, Ann. & Mag.

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* The author has a very singular way of spelling and latinizing Greek words; he writes *uperengcos* from the Greek ὑπέρογκος, *sunaristes* from συναριστος, *oiceobathes* from οἰκέω and βάθος, instead of *Hyperoncus*, *Synaristus*, *Bathœcus*.

Nat. Hist. xix. p. 46, in the branchial cavity of *Dactylopterus volitans*. Two other marine species are known at present, *A. purpureus* (Risso) and *A. giganteus* (Lucas), both from the Mediterranean. The freshwater species, *A. coregoni*, is not confined to Sweden, Hermann's *A. delphinus* being the same (Thorell, *l. c.* pp. 47–49). This is a reproduction of the original memoir briefly alluded to in Zool. Record, ii. pp. 311, 355.

Lamippe proteus, sp. n., Claparède, Ann. Sc. Nat. viii. pp. 23–28, pl. 5, Naples, in the cavity of *Lobularia digitata*. The genus was formed by Bruzelius, and it appears to come nearer to *Polyclinophilus* than to any other. The shape of the animal changes like that of a *Gregarina*, which is caused by partial contraction of the subcutaneous muscular layer. There are two pairs of antennæ and two pairs of feet, two rudimentary mandibles, one single red eye. The hinder extremity is forked, and each branch furnished with five bristles similar to those of the larvæ of *Lepas*. The digestive apparatus is simple. There are two small orifices on the ventral side of the animal, in the male as well as female; the sexes are similar also in the other external characters, and only to be distinguished by the inner sexual organs.

Splanchnotrophus brevipes (Hancock & Norman), found by R. Bergh in a new Æolidian mollusk (genus *Galvina* from the Kattegat); also he was not fortunate enough to find females. He thinks the genus may be better placed with the *Gnathostoma* [*Copepoda*] than with the *Chondracanthina*. Naturh. Forenings vidensk. Meddel. Kjöbenhavn, 1866, pp. 120, 124, and 125.

CIRRIPEDIA.

Balanidæ.

With regard to the muscles of the Balanidæ, F. Müller, in opposition to Mr. Darwin, thinks that the depressores tergi alone keep the opercular pieces down, so as to close the aperture, and that they are elevated, not by the depressores laterales, but simply by the protrusion of the whole body; this view is founded on a close examination of the points of attachment of these muscles in *Tetraclita porosa*. Arch. f. Ntrgesch. xxxiii. pp. 358, 359, note, pl. 8. figs. 52, 53.

Fecundation. The Balanidæ are generally presumed to be self-impregnating hemaphrodites. However, Fritz Müller states some cases which render it probable that one individual is fecundated by another: first, Darwin himself mentions a case of a *Balanus balanoides* with rudimentary penis, which nevertheless contained well-developed larvæ (Balanidæ, p. 106): secondly, Müller once observed a living *B. armatus* protruding its penis outside of the shell, and moving it as if searching for another individual; he says that if in this situation spermatozoa should be evacuated, these would be kept far away from the body of this individual by the continuous movement of the cirri. But the most important observation is that of a *hybrid* specimen: among a great number of *Balanus improvisus*, var. *assimilis*, one specimen struck him by its reddish colour; on closer examination it proved to agree, in the form of the aperture,

and in the scuta, walls, and septa, with *assimilis*; but the well-developed shining and peculiarly striped radii, as well as the structure of the upper lip, were decidedly those of *B. armatus*; the number of pairs of bristles at the last cirri was intermediate between both. Only four specimens of this intermediate form could be obtained during a month among at least 400 specimens of *B. armatus* and *B. assimilis*, which are in countless numbers on that coast. It may occur often that one species receives spermatozoa from another; but probably a fecundation will be successful only if the same individual does not receive simultaneously a spermatozoon from its own species. Therefore not where many specimens of both species are living together, but only where a specimen is almost solitary among many of the other species, is there a good chance of originating hybrids. F. Müller, Arch. f. Naturgeschichte, xxxiii. pp. 345, 356, pl. 7. figs. 29–43, and pl. 8. figs. 45 and 49.

The first stages of development of *Balanus sulcatus* and *Anatifa vulgaris* are described by Hesse, Ann. Sc. Nat. vii. pp. 123–128, pl. 2. figs. 1–9, and pp. 134, 135, pl. 3. figs. 1–7. In a footnote, p. 142, some biological observations are added concerning *Anatifa*; the stalk is fixed to objects by a calcareous layer which can be easily taken off with a thin knife from wood, without injuring the stalk: if the stalk is seriously wounded the animal dies; the elongation and turgescence of the stalk, as well as the lively movement of the cirri, are the best proof of the health of the animal and gradually vanish with it.

Balanus armatus, sp. n., F. Müller, Arch. f. Naturgeschichte, xxxiii. p. 329, pl. 7. figs. 1–28, on sponges, polypes, and rocks, Desterro, Southern Brazil. The third pair of the cirriferous feet is armed with numerous strong hooked teeth; similar teeth occur in *Acasta*, but on the fourth pair. As both live on and in sponges, the author thinks that these teeth serve to tear off and remove the overgrowing pieces of the sponge.

Sacculinidæ.

Sacculinidia gibbsii, sp. n., Hesse, Ann. Sc. Nat. vii. p. 378, on *Pisa gibbsii*; *S. herbstii*, sp. n., Hesse, ibid. p. 380, on *Herbstia condyliata*. The author states it as a rule that one species is always infested by the same species of parasites also among Crustacea, p. 377.

Pycnogonidæ.

Phoxichilus inermis, sp. n., Hesse, Ann. Sc. Nat. vii. p. 199, found on a ship returning from the Mediterranean.

Oiceobathes, g. n. Two pairs of appendages at the head, called antennæ by the author, but without doubt homologous to those of *Nymphon*. Legs stout and rather short, as in *Pycnogonum*. *O. arachne*, sp. n., Brest, in a depth of 50 metres. Hesse, Ann. Sc. Nat. vii. p. 201 and p. 214, pl. 4. figs. 1–6.

ROTIFERA

BY

E. Perceval Wright, M.A., M.D., F.L.S.

Claparède, Ed. Miscellanées Zoologiques.—I. Sur la manière dont certains Rotateurs introduisent la nourriture dans leur bouche.—II. Sur le *Balatro calvus*, nov. gen. & sp., et les Rotateurs entièrement dépourvus de cils vibratiles.—III. Type d'un nouveau genre de Gastérotriches. Ann. Sc. Nat. 1867, viii. pp. 5–23, pls. 3 & 4.

Davis, H. On two new species of the genus *Œcistes*, Class Rotifera. Quart. Journ. Micr. Sc. xv. pp. 13–16, pl. 1.

Synchæta baltica. Garner mentions that this Rotifer has the power of forming a very fine thread, by which it attaches itself to foreign bodies. Brit. Assoc. Report, 1866, Trans. p. 73.

Huxley and Williamson in England, and Leydig in Germany, have observed the double row of cilia in *Melicerta* and *Lacinularia*. Huxley has also described it in *Philodina*. Claparède (*l. c.*) describes it as it exists in *Rotifer inflatus* (Duj.), in which the inferior row of cilia is borne upon a crest situated obliquely to the plane of the vibratile wheel. The same fact has been observed, but with somewhat greater difficulty, in *R. vulgaris* (Ehrb.).

In a footnote to the above paper Claparède confirms Mr. Gosse's account of the manner in which *Melicerta ringens* builds up its tube, and remarks that though Mr. Gosse's observations may have obtained universal credit in England, yet they would appear to have been very generally overlooked on the Continent. Thus Leydig, while giving a very formal contradiction to the hypothetical descriptions of Ehrenberg, does not once allude to the labours of Gosse.

Taphrocampa, Gosse. Claparède (*l. c.*) considers that this genus should be placed among the Rotifers (Cephalotricha), and not among the Gastrotricha; it has none of the characters peculiar to this latter division, and it possesses a *mastax*, the buccal apparatus so characteristic of the Cephalotricha, and completely absent in the Gastrotricha.

Claparède (*l. c.*) refers to the investigations of Mecznikow (*vide* 'Zool. Record,' 1866, p. 577), and adopts his order Gastrotricha, which will then contain the following genera:—*Chætonotus*, Ehrb.; *Ichthydium*, Ehrb.; *Chætura*, Mcznk.; *Cephalidium*, Mcznk.; *Dasydites*, Gosse; and *Turbanella*, Schlz. *Sacculus*, Gosse, has a mastax and cannot come into this order. All the hitherto described species of these genera have been found in fresh water.

Claparède describes the following new genus, the only species of which lives in the sea; this species is hermaphrodite.

Hemidasys, gen. nov., Claparède, *l. c.* p. 23, pl. 4. figs. 5–9. Of linear form, with cilia restricted to the anterior region of the ventral surface of the body. Body armed with a certain number of conical appendages situated on the ventral surface. *H. agaso*, sp. n., found in the Bay of Naples, fixing itself voluntarily on the body of *Nereilepas caudata*, Delle Chiaje.

Chætonotus longicaudatus, sp. n., Tatem, Quart. Journ. Micr. Sc. vol. xv. 1867, p. 252, pl. 10. fig. 1, found at St. Leonards.

The publication of Mecznikow's paper on *Apsilus lentiformis* (*vide* 'Zool. Record,' 1866, pp. 577 & 578) reminded Claparède of a species of Rotifer likewise deprived of vibratile cilia. This species had been observed some years ago in the Seime, a little river of the Canton of Geneva, and was found creeping over the bodies of *Trichodriti* and other small Oligochæta. He describes it as a new genus:—

Balatro, gen. nov., Claparède, *l. c.* p. 14, pl. 4. figs. 3, 4. Body vermiform, very contractile; posterior extremity terminated by two lobes:—the one ventral, of a semilunar form, transverse; the other dorsal, nearly cylindrical, acting as a foot. Mallei in the form of hooks. Neither vibratile organs nor eyes. *B. calvus*, sp. n.; all the individuals observed were females.

Davis (*l. c.*) describes two new species of tubiculous Rotifera, *Œcistes intermedius*, p. 14, pl. 1. figs. 1, 2, 3, 4, and *Œ. longicornis*, p. 14, pl. 1. figs. 5, 6, 7, 8; both on aquatic plants in ponds near Leytonstone.

ANNELIDA

BY

E. Perceval Wright, M.A., M.D., F.L.S.

A. *Separate Work.*

Malmgren, A. J. Annulata Polychæta Spetsbergiæ, Grœlandiæ, Islandiæ et Scandinaviæ hactenus cognita. Cum xiv. tabulis. Helsingfors, 1867, pp. 127.

This is one of the most valuable catalogues of Annelids yet published. Two hundred and fifty-eight species are enumerated. The synonymy of each species is given; several new genera and species are described (to which reference is more especially made in the special portion of the Record). Eighty-five species are figured, several figures being devoted to each species; and several of these are species more fully described, but not figured, in Malmgren's "Nordiska Hafs-annulater" (*vide*

Zool. Record, 1865, p. 713). The author having consulted the type specimens of many of Dr. Johnston's species in the British Museum, has been able to correct to a very large extent the synonymy of the 'Catalogue of Worms in the British Museum.'

The author states that this memoir contains the principal results of his examination of the rich collection of Annulata from the North Seas, to be found in the Royal Swedish Natural-History Museum at Stockholm. The geographical and bathymetrical distribution, when not otherwise mentioned, is always quoted from the specimens in the museum, or from the author's own experience. One or two species are referred to that do not belong to the regions of which this memoir more particularly treats, but these are left without a consecutive number.

The plates were all drawn and engraved under the author's superintendence, and with the greatest possible accuracy. The greater number of the figures, as well as the most important microscopic details, were delineated by means of the camera. An index to the genera and species, however, is wanting.

B. *Papers published in Journals.*

Claparède, E. De la structure des Annélides. Note comprenant un examen critique des Travaux les plus récents sur cette classe de Vers. Separately reprinted from the Archives des Sciences de la Bibliothèque Universelle, Sept. 1867, pp. 1–42; translated in Ann. & Mag. Nat. Hist. Nov. 1867, pp. 337–361.

The author calls attention to the partially forgotten and much overlooked work of Delle Chiaje, and briefly criticises the recently published works of Quatrefages and Ehlers.

This very interesting critique, which forms part of the introduction to a work on the Annelida of the Bay of Naples, already in the press, will be consulted by all taking any interest in the study of the Annelida: here we can do nothing more than call our readers' attention to it.

M. Claparède, while he refuses to Ehlers's work the merit of being a "treatise on Annelida," praises it as a model of exactitude. He follows step by step Quatrefage's 'History of Annelids,' annotating and correcting the statements made therein. Even though Prof. Claparède's criticisms are sometimes severe, yet it is impossible not to admire the straightforward candour that pervades the whole of this paper, the justness of most of his remarks, and the great ability which characterizes them.

——, and Panceri, P. Nota sopra un Alciopide parassito della *Cydippe densa*, Forsk. Mem. Soc. Ital. delle Sc. Natur. vol. iii. No. 4, 1867, with a plate, pp.

Ehlers, E. Die Gattung *Heteronereis* (Œrst.) und ihr Verhältniss zu den Gattungen *Nereis* (Gr.) und *Nereilepas* (Gr.).

Nachrichten der königl. Gesellsch. zu Göttingen, 1867, Mai, No. 11, pp. 1–10.

Grube, Eduard. Reise der Oesterreichischen Fregatte Novara. Zoologischer Theil, zweiter Band. Anneliden. Mit vier Tafeln. Wien, 1867, pp. 1–46.

This portion of the history of the voyage of the 'Novara' is edited by Dr. Grube, and contains figures and descriptions of some new species of Annelids collected during the expedition. Several of the species having been briefly characterized in the Verhandlungen of the k.-k. zoologisch-botanischen Gesellschaft in Wien, for 1866, will be found alluded to in the 'Record' for last year; the others will be mentioned in the special portion of this year's 'Record.'

——. Neue Anneliden aus den Gattungen *Eunice*, *Hesione*, *Lamprophoës* und *Travisia*. Schles. Gesellsch f. Vaterl. Cultur, 1866, pp. 61–64.

——. Resultate einer Revision der Euniceen. Ibid. pp. 66–68.

——. Ueber Landblutegel. Ibid. pp. 59–60.

Jourdain, S. Observations sur un Chétoptère des côtes de la Manche. Annales des Scien. Naturel. 5e série, Zool. t. vii. 1867, p. 380.

Extracted from the Bulletin of the Association Scientifique de France.

——. Sur quelques points de l'anatomie des Siponcles. Compt. Rend. Avril 29, 1867, pp. 871–873, and Ann. & Mag. Nat. Hist. vol. xix. 1867, pp. 442–443.

Keferstein, W. Untersuchungen über einige amerikanische Sipunculiden. Zeitschr. f. wissensch. Zoologie, Bd. xvii. pp. 44–55, Taf. 6: Dec. 17, 1866 (*vide* Zool. Record, 1866, pp. 580 & 599).

Krohn, A., and Schneider, A. Ueber Annelidlarven mit porösen Hüllen. Reichert u. Du Bois-Reymond's Archiv, 1867, pp. 498–508, Taf. 13.

ANNELIDA POLYCHÆTA.

Agassiz, A. On the young stages of a few Annelids. Ann. & Mag. Nat. Hist. vol. xix. 1867, pp. 203–218 & 242–257, plates 5 & 6 (*vide* Record for 1866, p. 579).

Marcusen gives a provisional list, in which in many cases the species are only referred to their genera, of the Annelids met with by him in the Black Sea. Archiv f. Naturg. xxxiii. Jahrg. Bd. i. p. 358.

Opaque bodies have been met with by Schneider in the Bays of Nice and Villafranca. These bodies are about the size of large oil-drops, and are

covered with a thick skin, which is pierced by many pore-canals. In the course of twenty-four hours a row of short cilia make their appearance; these on the third day are greatly increased in size, and at a spot corresponding to the foremost region of the body there is a tuft of longer cilia; at either side of this, dark eye-spots were seen: by the eighth day two pairs of bristle-bundles were seen, and the larva resembled that figured by Müller from Trieste (*vide* Krohn & Schneider, *l. c.* p. 498).

Aphroditidea*.

Aphroditidæ.

According to Malmgren (*l. c.* p. 3), *Aphrodita borealis*, Johnst., is the young of *A. aculeata*, Linn.

Lætmonice kinbergi, Baird = *L. filicornis*, Kbg. Malmgren, *l. c.* p. 3.

Polynoidæ.

Lepidonotus cirratus v. *parasiticus*, Baird = *Nychia cirrosa*, Mgrn., Malmgren, *l. c.* p. 5; *L. pharetratus*, Johnst. = *Estnoa nodosa* (Sars).

Nychia amondseni, sp. n., Malmgren, *l. c.* p. 5, tab. 1. fig. 4, Greenland.

Dasylepis, g. n., Malmgren (*l. c.* p. 6), for that section of Polynoidæ with eighteen pairs of elytra; the characters are:—Corpus elongato-oblongum sublineare. Lobus cephalicus antice in prominentias duas conicas productus. Antennæ sub basi tentaculi affixæ. Elytra paria 18, totum dorsum imbricatim tegentia. Setæ rami superioris spinulis minimis in confertis seriebus transversalibus dispositis asperæ, crassiores quam setæ rami inferioris. Hæ infra apicem integrum curvatum seriatim transverse spinulosæ. Cirri duo anales sub ano. *D. asperrima* (Sars) = *Lepidonotus pharetratus*, Baird (non Johnston).

Lagisca, Mgrn., *vide* Zool. Record, 1865, p. 724. The characters are amended as follows (Malmgren, *l. c.* p. 7:)—Corpus elongato-oblongum postice attenuatum. Lobus cephalicus antice in prominentias duas conicas productus. Antennæ sub basi tentaculi affixæ. Oculi quatuor, duo antici laterales ab apice prominentiarum longe remoti vix ante medium lobi cephalici, duo postici in vertice ad basin lobi cephalici siti. Elytra paria 15, in segmentis pedibus instructis 1, 3, 4, 6, 8 . . . . . 22, 25, 28, 31, obvia, totum dorsum, segmentis ultimis (c. x.) sæpe exceptis, obtegentia. Setæ rami superioris apicem versus spinulis minimis, in seriebus transversalibus confertis dispositis, asperæ. Setæ rami inferioris his tenuiores et plerumque multo longiores, rare in segmentis posticis etiam breviores, infra apicem integrum obsolete bidentatum vel interdum conspicue bidentatum spinulosæ. Cirri duo anales sub ano. *L. rarispina* (Sars); *L. propinqua*, sp. n., Mgrn. *l. c.* p. 9, tab. 1. fig. 3, Bahusia.

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* It is still a matter of some difficulty to arrange the Annelida Polychæta; and opinions differ very considerably, not only as to the sequence of the orders and families, but even as to whether certain sections should be called orders or subfamilies. Under these circumstances, it has been thought advisable to follow the classification given in Quatrefages's 'Histoire des Annélides et Géphyriens.' It will be recollected that this has been done simply to facilitate reference, and by no means as implying a belief in the correctness of the views expressed in that work. In one or two cases even this classification has, as a matter of necessity, been departed from, as in the case of the family of Sternaspidæ.—E. P. W.

To this genus belong *Lepidonotus semisculptus*, Johnst., *L. dumentosus*, Qfg., &c.

Parmenis, g. n., Malmgren, *l. c.* p. 11. Corpus sublineare. Lobus cephalicus antice in prominentias duas conicas productus. Antennæ sub basi tentaculi affixæ. Oculi quatuor, duo antici laterales paullum ante medium lobi cephalici, duo postici in vertice ad basin capitis. Elytra paria 15, totum dorsum imbricatim tegentia. Setæ rami superioris seriatim transverse spinulosæ, breviores et crassiores quam setæ rami inferioris. Hæ infra apicem glabrum bifidum vel profunde bidentatum dente superiore apice curvato, dente inferiore tenue recto, utrinque spinulosæ. *P. ljungmani*, sp. n., *l. c.* p. 11, tab. 1. fig. 2, Bahusia.

Lænilla glabra, Mgrn. = *Lepidonotus semisculptus*, Baird (non Johnston). Malmgren, *l. c.* p. 12.

Antinoë finmarchica, sp. n., Malmgren, *l. c.* p. 13, Finmark.

Leucia, g. n., Malmgren, *l. c.* p. 13. Corpus oblongum posteriora versus angustius. Lobus cephalicus antice in prominentias duas conico-acuminatas productus; antennæ sub basi tentaculi affixæ. Elytra paria 16, in segmentis pedibus instructis 1, 3, 4, 6 . . . . . 20, 22, 25, 28, 31 et 34 obvia, totum dorsum obtegentia. Setæ rami superioris infra apicem rectum serrulatæ; setæ rami inferioris his multo longiores et tenuiores, infra apicem curvatum transverse seriatim spinulosæ. Cirri duo anales sub ano. *L. nivea* (Sars), Norway, very rare.

Alentia gelatinosa (Sars) = *Lepidonotus imbricatus*, Johnston & Baird. (*Aphrodita imbricata* (L.) is *Harmothoë imbricata* (L.).) A mistake of some moment in the description of the genus *Alentia* is corrected by Malmgren, *l. c.* p. 14: Elytra . . . dorsum *non* omnino tegentia &c.

Malmgren amends his description of the genus *Enipo*, vide 'Zool. Record,' 1865, p. 725, by adding (*l. c.* p. 15):—"cirrus ventralis parce ciliatus subulato-attenuatus, haud brevis."

Lepidasthenia, g. n., Malmgren, *l. c.* p. 15. Corpus elongatum sublineare depressum. Oculi 4, utrinque bini approximati, laterales, par anterius in vel pone medium lobi cephalici. Antennæ una cum tentaculo e parte anteriore lobi cephalici productæ. Elytra minuta posteriora versus magnitudine decrescentia, maximam partem dorsi nudam relinquentia, in segmentis pedibus instructis 1, 3, 4, 6, 8 . . . . . 20, 22, 25, 28 . . . . . 79, 82, obvia. Ramus superior pedis perminutus acicula sola præditus, setis omnino carens. Setæ rami inferioris infra apicem subrectum bidentatum, dentibus subrectis, paulo dilatatæ serrulatæ, 1, l. 2, superiorum ceteris plerumque duplo validiores et crassiores, apice integro, margine altero vero dentibus paucis serrato. Cirri anales 2 breves pone anum dorsualem. *L.* (*Polynoë*) *elegans* (Grube).

Sigalionidæ.

Leamia yhleni, sp. n., Malmgren, *l. c.* p. 17, Isle de Ré, near Rochelle.

Eunicea.

Eunicidæ.

Adopting the principle of allowing a generic name always to accompany the species which the originator of the generic name has had an opportunity of examining or preferably intended, Dr. Malmgren regards the old generic names in the family Eunicidæ as being most applicable as follows:—The

name *Eunice* was given by Cuvier to *E. gigantea* (Cuv. Règ. An. ii. 525, new ed. iii. 199); so this name could not possibly be applied to any other group in the family than that to which *Eunice gigantea* belongs. Kinberg lately* instituted a new generic name, *Eriphyle*, for a group in which he would include *Eunice gigantea* (Cuv.), and then he employs the name *Eunice* (Cuv.) in a sense for which Savigny's old name *Leodice* in the strict sense would not only have been applicable but correct; so that Kinberg's name *Eriphyle* should, as simply synonymous with *Eunice* (Cuv.), disappear, and the name *Leodice*, Sav., in its restricted sense ought to be employed for the group to which Kinberg applies the name *Eunice*; for *L. antennata*, Sav. (Descr. d. l'Egypte, xxi. p. 380), which ought to be regarded as the type of *Leodice* (Sav.), belongs to Kinberg's genus *Eunice*.

Savigny indeed separates from the true Leodicæ simplices those species which are destitute of tentacular cirri (as Leodicæ marphysæ), and describes, from a dead specimen, *Leodice opalina*, Sav. (= *Nereis sanguinea*, Mont.), as belonging to this latter section; so that this species is thus the type of the genus *Marphysa* (Sav.), Qfg., with which Kinberg's new genus *Nauphanta*, judging from the description, quite corresponds.

Grube describes briefly the following as new species:—*Eunice purpurea*, Gr. *l. c.* p. 68, quite different from *E. violacea*; *E. longicornis*, Gr. *l. c.* p. 68, Puerto Cabello; *E. attenuata*, Gr. *l. c.* p. 68, Brazil, near *E. prayensis*, Kbg.; *E. subdepressa*, Gr. *l. c.* p. 68, Puerto Cabello; *E. modesta*, Gr. *l. c.* p. 64; *E. paucibranchis*, Gr. *l. c.* p. 64; *E. bipapillata*, Gr. *l. c.* p. 64; *E. harassii*, Gr. *l. c.* p. 64; *E. magnifica*, Gr. *l. c.* p. 64.

Grube (*l. c.* p. 64) states that his *Eunice gracilis* (*vide* Novara Reise, Zool. Theil, 2nd Bd. p. 9, Taf. 1. fig. 2) is only a variety of *E. antennata*, Sav. *E. frauenfeldi*, Gr., is described in detail and figured in Novara Reise, Zool. Theil, 2nd Bd. p. 11, Taf. 1. fig. 3.

Onuphidæ.

Audouin & Milne-Edwards instituted the generic name *Onuphis* for *O. eremita*, Aud. & M.-Edw., and *Diopatra* for *D. amboinensis*, Aud. & M.-Edw.; and Dr. Malmgren thinks that these generic names should not gain any other significance; but Quatrefages has applied the name *Onuphis* for *Nereis tubicola*, Müll., though he, at the same time, acknowledges that this animal is generically distinct from *O. eremita*, Aud. & M.-Edw., and brings together, under *Diopatra*, not only *D. amboinensis*, but even *O. eremita*, Aud. & M.-Edw., *O. conchylega*, Sars, and other, in a generic point of view, quite distinct Annelids. With good systematic tact, Johnston had already separated *O. conchylega* from the genus *Onuphis*, Aud. & M.-Edw., and placed it in a genus, *Nothria*, to which he then refers *Nereis tubicola*, Müll.; but this last-named species ought to be referred to a special genus, which must get a new name, inasmuch as *Onuphis eschrichtii* (= *O. conchylega*, Sars) becomes, according to Johnston's statement, the type of his genus *Nothria*.

Nothria. Malmgren, *l. c.* p. 66, considers that Johnston's genus *Northia* (Cat. Brit. Worms in Coll. Brit. Mus. p. 136) should be spelt *Nothria*, as from Νωθρός.

Hyalinœcia, g. n., Malmgren, *l. c.* p. 67. Corpus lineare depressum. Palpi

* *Vide* 'Zool. Record,' 1865, p. 725.

breves crassi subglobosi, sub lobo cephalico siti. Antennæ ovatæ breves in apice lobi cephalici antice rotundati. Tentacula 5 filiformia longa ad basin annulata, anteriora lateralia anum utrinque multo breviora quam tria posteriora in ordine transversali vertice posita. Oculi 2. Cirri tentaculares nulli. Pedes antici lingula et cirro inferiore discrepantes a ceteris simplicibus subconicis obtusis cirro modo dorsuali branchiali præditis. Setæ in segmento antico aciculæformes parum prominentes apice vix curvato obtuse bidentatæ, in ceteris segmentis triformes: aliæ validæ rectæ apice bidentato, aliæ tenuiores versus apicem attenuato-acuminatum limbatæ, aliæ minutissimæ apice infundibuliformi dilatato striato. Cirri duo anales sat longi, segmento ultimo ovato magno setis destituto affixi. Anus in dorso segmenti ultimi. Tubus, quam animal inhabitat, teres cylindricus posteriora versus paullum attenuatus, utrinque apertus, vitreus pellucidus fulvus. *H. tubicola* (Müller), p. 67, tab. 8. fig. 49.

Lumbrinerea.

Lysidice capensis, sp. n., is described by Grube (*l. c.* p. 12, Taf. 1. fig. 4).

Lumbriconereis cavifrons, Grube, and *L. jacksoni*, Kinb., are described and figured by Grube (*l. c.* pp. 13–15, Taf. 1. figs. 5 & 6).

Amphinomea.

Euphrosyne capensis, Kinb., is described and figured by Grube (*l. c.* p. 6, Taf. 1. fig. 1).

A species of *Amphinome* found at Taïti and Nicobar is referred doubtfully to *A. pacifica*, Kinb., by Grube (*l. c.* p. 8).

Nephthydea.

Nephthys lactea, sp. n., Malmgren, *l. c.* p. 18, not described, a unique specimen from Norsorak in Greenland.

N. longisetosa, Œrsted, is not the *N. longisetosa* of Johnston. Malmgren, *l. c.* p. 19.

Cirratulea.

A species of a new genus, *Chætozone*, is described by Malmgren, *l. c.* p. 96, but no diagnosis is given. While closely related to *Dodecaceria*, Œrst., it differs from this genus in several particulars, the most remarkable of which would appear to be the following:—"Branchiæ filiformes, utrinque 8–16, anticæ longissimæ confertæ, postice sensim breviores magis discretæ; par anticum ceteris sæpe crassius. Fasciculi setarum discreti versus posteriora fere confluentes, in segmentis ultimis latera corporis utrinque annulatim cingentes." Longit. c. 20 millim. *C. setosa*, sp. n., Malmgren, *l. c.* p. 96, tab. 14. fig. 84, Spitzbergen, Finmark, and Bahusia.

Chloræmea.

Trophonia glauca, sp. n., Malmgren, *l. c.* p. 82, tab. 13. fig. 78, Bahusia.

Brada granulata, sp. n., Malmgren, *l. c.* p. 85, tab. 12. fig. 71, Greenland, Spitzbergen, &c.

Flabelligera, Sars (1829), is substituted for *Siphostoma*, Otto (1820), in use prior to 1820 by ichthyologists.

Sternaspidea.

Sternaspis assimilis, sp. n., Malmgren, *l. c.* p. 87, Isle de Ré, near Rochelle; *S. islandica*, sp. n., Malmgren, *l. c.* p. 87, tab. 14. fig. 85, Iceland.

Nereïdea.

Malmgren (*l. c.* p. 46) proposes the following subdivisions of this family, in which the new genera proposed are sufficiently indicated; but we refer to the pages where full diagnoses will be found:—

Nereidæ veræ boreali-europeæ in genera dispositæ.

I. Pedes posteriora versus formam valde mutantes.

A. Setæ per totum corpus falcatæ et spinosæ. Paragnathi [1] separati. Mutatio pedum fit non abrupte.

1. Hedyle, Mgrn.
H. lobulata, Mgrn.

B. Setæ in posteriore parte corporis cultratæ, in anteriore modo spinosæ vel sæpius spinosæ et falcatæ.

1. Mutatio pedum fit abrupte. Setæ in anteriore parte corporis falcatæ et spinosæ.

1 *a*. Paragnathi connati, pectines minutos formantes. Lobus cephalicus antice rotundatus basi emarginata. Cirri tentaculares sat longi .... 2. Iphinereis, Mgrn.
I. fucicola (Œrst.), Mgrn.

1 *b*. Paragnathi separati annulatim et gregatim dispositi. Lobus cephalicus subconicus truncatus.

3. Heteronereis (Œrst.).
H. grandifolia (H. Rathke).

2. Mutatio pedum fit sensim. Setæ modo spinosæ in anteriore corporis parte. Paragnathi minuti vel evanescentes.

4. Eunereis, Mgrn.
E. longissima (Johnst.), Mgrn. (excl. syn. Œrst.).

II. Pedes per totum corpus æquales vel posteriora versus formam paullum sensim mutantes. Setæ per totum corpus spinosæ et falcatæ vel modo spinosæ.

A. Lingula suprema admodum magna foliacea.

1. Per totum corpus modo setæ spinosæ.

5. Alitta (Knbg.).
A. virens (Sars), Mgrn.

2. Setæ falcatæ et spinosæ.

6. Stratonice, g. n., Mgrn. *l. c.* p. 56.
S. marioni (Aud. & M.-Edw.).

B. Lingula suprema ceteris haud multo vel paullum major. Setæ per totum corpus falcatæ et spinosæ.

1. Pedes posteriora versus formam paullum mutantes: ramus superior inferiore sensim longior. Cirri tentaculares longissimi.

1 *a*. Lobus cephalicus rotundatus, basi leviter emarginata. Paragnathi connati pectines minutos formantes.

7. Leontis, g. n., Mgrn. *l. c.* p. 52.
L. dumerili (Aud. & M.Edw.).

[1] Noduli duri cornei dentiformes plerumque conici nigrescentes proboscidis exsertæ.

1 *b*. Lobus cephalicus breviter conicus, apice truncato, basi transversa. Paragnathi separati, annulatim et gregatim dispositi.

8. Praxithea, g. n., Mgrn. *l. c.* p. 50.

P. irrorata, sp. n.

2. Pedes per totum corpus æquales vel subæquales: ramus superior postice non multo longior. Lobus cephalicus conicus apice truncatus. Cirri tentaculares mediocres, non longi. Paragnathi separati, annulatim et gregatim dispositi.

2 *a*. Ramus superior lingulis tribus (pars setigera in lingulam brevem conicam producta).

9. Hediste, g. n., Mgrn. *l. c.* p. 48.

H. diversicolor (Müll.).

2 *b*. Ramus superior lingulis binis (pars setigera in lingulam non producta).

* Lingula suprema dorso turgido convexo, ceteris longior et major.. 10. Nereilepas (Sav.).

N. fucata (Sav.).

* Lingula suprema dorso non turgido, ceteris haud multo major.

† Paragnathi superiores articuli basalis: laterales conici, medii nulli.

11. Nereis (L.).

N. pelagica (L.).

† Paragnathi superiores articuli basalis laterales: solus utrinque transversus compressus elongato-oblongus, medii subconici.

12. Lipephile, g. n., Mgrn. *l. c.* p. 50.

L. margaritacea (M.-Edw.).

Ceratocephale, g. n., Malmgren, *l. c.* p. 60. Corpus elongatum postice sensim attenuatum. Lobus cephalicus subrectangularis basi transversa, antice in prominentias 4 conicas antrorsum porrectas productus, utrinque binas ad basin coalitas, interiores tentaculis exteriores palpis Nereidum respondentes. Oculi nulli visibiles (in sola specie cognita!). Cirri tentaculares utrinque 4 filiformes inæquales, ut in Nereidibus dispositi. Proboscis exsertilis apice maxillis duabus validis denticulatis ut in Nereide armata, paragnathis nullis, papillis vero membranaceis mollibus in articulo basali. Pedes per totum corpus fere eadem forma. Rami pedis separati: ramus superior minor conico-acuminatus simplex, ramus inferior major lingulis binis. Setæ modo spinosæ articulo terminali valde attenuato-acuminato, in aliis (rami inferioris) ad basin paullum geniculatim arcuato acie ciliato-serrulata, in aliis (rami superioris) recto acie integra. Cirri dorsuales versus basin compressi. Cirri ventrales in singulo segmento bini gemini ad insertionem conjuncti. Cirri anales? *Ceratocephale lovéni*, sp. n., Malmgren, *l. c.* p. 61, tab. 5. fig. 33, Bahusia, Lindo.

The following species are figured in Malmgren's catalogue:—*Nereis pelagica* (L.), tab. 5. fig. 35; *Hediste diversicolor* (Müll.), tab. 4. fig. 28; *Leontis dumerili* (Aud. & M.-Edw.), tab. 4. fig. 25; *Nereilepas fucata* (Sav.), tab. 3. fig. 18; *Eunereis longissima* (Johnst.), tab. 5. fig. 32; *Iphinereis fucicola* (Œrst.), tab. 5. fig. 29; *Heteronereis grandifolia* (H. Rathke), tab. 5. fig. 31; *H. glaucopis*, Mgrn. tab. 4. fig. 27.

Nereis languida, sp. n., Grube, *l. c.* p. 15, Taf 2. fig. 1, Vancauri; *N.*

paulina, sp. n., Grube, *l. c.* p. 16, Taf. 1. fig. 7, St. Paul; *N.* (*Nereilepas*) *stimpsonis*, Grube, figured Taf. 1. fig. 8; and *N.* (*N.*) *brevicirris*, Grube, figured Taf. 2. fig. 2.

Nereis zonata, sp. n., Malmgren, *l. c.* p. 46, tab. 5. fig. 34, Spitzbergen.

Praxithea irrorata, sp. n., Malmgren, *l. c.* p. 50, tab. 4. fig. 24, Bahusia.

Tylorrhynchus chinensis, Grube, *l. c.* p. 22, Taf. 2. figs. 3 *a*–3 *g*.

Heteronereis. Ehlers (*l. c.*), while he promises to treat somewhat in detail of the relations of this genus in the forthcoming second part of his 'Borstenwürmer,' takes the present opportunity of stating his conviction that the forms hitherto placed in the genus *Heteronereis* are but stages of sexual development of *Nereis* or *Nereilepas*, and he would propose to rectify the synonymy as follows:—*Nereis* (*Leontis*, Mgrn.) *dumerilii* (Aud. & M.-Edw.) = *Heteronereis* (*Iphinereis*, Mgrn.) *fucicola* (Œrst.) ♂ ♀; *Nereis pelagica* (L.) = ♂ *Heteronereis renalis* (Johnst.), *grandifolia* (Rathke), ♀ *Heteronereis assimilis* (Œrst.); *Nereis* (*Perinereis*, Kbg., *Lipephile*, Mgr.) *cultrifera* (Gr.) (*margaritacea*, M.-Edw) = *Lycoris lobulata* (Rathke); *Heteronereis* (*Hedyle*, Mgrn.) *lobulata* (Johnston, Cat. Brit. non-parasitic Worms, p. 61, non Quatrefages, Hist. des Annelés, i. p. 561); *Nereis vexillosa* (Gr.) = *Heteronereis arctica*, Grube, Middendorf's Reise in den äusserst-Nord u. Ost Sibiriens, Bd. ii. Zool. i. p. 11 = *H. middendorffii* (Mgrn.).

Syllidea.

Syllidæ.

Syllis vancaurica, sp. n., Grube, *l. c.* p. 25, Taf. 3. fig. 2, Vankauri.

Syllis borealis, sp. n., Malmgren, *l. c.* p. 42, tab. 6. fig. 42, Finmark; *S. fasciata*, sp. n., Malmgren, *l. c.* p. 43, tab. 7. fig. 47, and tab. 8. fig. 52, Spitzbergen.

Figures of the following are given by Malmgren (*l. c.*):—*Syllis armillaris* (Müll.), tab. 7. fig. 46; *S. cornuta*, H. Rathke, tab. 7. fig. 45.

Autolytus fallax, sp. n., Malmgren, *l. c.* p. 33, tab. 6. fig. 41, Spitzbergen; *A. incertus*, sp. n., Malmgren, *l. c.* p. 35, tab. 6. fig. 40, Spitzbergen; *A. newtoni*, sp. n., Malmgren, *l. c.* p. 36, Spitzbergen; *A. alexandri*, sp. n., Malmgren, *l. c.* p. 37, tab. 7. fig. 39, Davis Straits.

The genus *Pterosyllis*, limited as it has lately been by Claparède, falls into two distinct genera:—*Gattiola*, Johnston, with the species *G. spectabilis*, *G. finmarchica*, and *G. formosa* (Clap.), Mgrn.; *Pterosyllis*, in the strict sense, whose sole hitherto known representative will be *P. dorsigera*, Clap. These genera may be briefly characterized as follows:—

Gattiola, Johnst. Setæ falcatæ articulo terminali apice integro (haud bidentato). Oculi 4 dorsuales mediocres, utrinque bini approximati. Appendices duæ nuchales. Cirri tentaculares utrinque bini.

Pterosyllis (Clap.), s. str. Setæ falcatæ articulo terminali apice bidentato. Oculi 4, anteriores sat magni ventrales, posteriores minores dorsuales. Appendices duæ nuchales. Cirri tentaculares utrinque bini. (Malmgren, *l. c.* p. 38.)

Pionosyllis, g. n., Malmgren, *l. c.* p. 39. Proboscis exserta solo dente valido conico armata, pone marginem papillis mollibus c. 10 coronata. Setæ compositæ subfalcatæ articulo terminali elongate lineari apice bidentato. Segmenta media et posteriora fasciculis setarum capillarium longissimarum deciduarum prædita, præter setas falcatas. Cetera ut in genere *Syllide*.

P. compacta, sp. n., Mgrn. *l. c.* p. 40, tab. 7. fig. 48, Spitzbergen. Lat. N. 80°, long. E. 13°.

Eusyllis, g. n., Malmgren, *l. c.* p. 40. Proboscis exserta dente solo valido armata, pone marginem durum subtilissime crebre denticulatum ordinibus binis transversis sejunctis papillarum (c. 10) mollium coronata. Setæ compositæ falcatæ articulo terminali breve apice bidentato. Segmenta media et posteriora in aliis fasciculos setarum capillarium longissimarum, præter setas falcatas, gerentia, in aliis vero nullæ setæ capillares. Cirri duo anales. Cetera ut in genere *Syllide*.

E. bloomstrandi, sp. n., *l. c.* p. 40, tab. 6. fig. 43, Spitzbergen.

E. monilicornis, sp. n., *l. c.* p. 41, tab. 6. fig. 44, Spitzbergen.

Chætosyllis, g. n., Malmgren, *l. c.* p. 44. Animal sexuale. Corpus lineare depressiusculum dorso convexo ventre subplano, pedibus ut in genere *Syllide*. Lobus cephalicus haud separatus, cum segmento primo setigero prorsus cognatus. Hæc pars cephalica subbiloba, fronte transversa declivi in medio exciso. Oculi 4, utrinque duo, inferiores majores in declivitate antica partis cephalici antrorsum et deorsum spectantes, superiores minores dorsuales prope marginem anticum sursum vergentes. Tentacula duo brevia frontalia, unum utrinque inter oculos insertum. Segmenta fere omnia setis falcatis et fasciculis setarum capillarium longissimarum instructa. Setæ falcatæ articulo terminali subfalciformi elongato apice leviter bidentato acie ciliato-serrulato. Cirri anales duo.

C. ærstedii, sp. n., *l. c.* p. 45, tab. 8. fig. 51, Spitzbergen. This genus has close affinities with *Loida*, Johnst., *Tetraglenæ*, Gr., and *Trichosyllis*, Schmarda, but differs in the number of the eyes and tentacles, in the form of the setæ, as well as in other details.

Staurocephalidæ.

Staurocephalus erucæformis, Mgrn., is figured by Malmgren, *l. c.* tab. 8. fig. 50.

Prionognathus boecki, sp. n., Malmgren, p. 62, Norway.

Sphærodoridæ.

Sphærodorum claparedii. Greeff's paper describing this annelid, *vide* 'Record' for 1866, p. 593, will be found translated in Ann. & Mag. Nat. Hist. 1867, vol. xx. pp. 1–10, pl. 1.

Hesionea.

Hesione genetta, sp. n., Grube, *l. c.* p. 65, Samoa Islands.

Lamprophoës, g. n., Grube, *l. c.* p. 65, for an annelid from the Samoa Islands, which, in its habit, number of eyes, tentacular cirri, and pinnæ, agrees with *Hesione*, but differs from it in having an unpaired simple antenna between the back eyes.

L. cuprea, sp. n., Grube, *l. c.* p. 66.

Castalia arctica, sp. n., Malmgren, *l. c.* p. 32, Spitzbergen.

Phyllodocea.

Phyllodocidæ.

Genetyllis. Malmgren (*l. c.* p. 19) corrects an error in the diagnosis of this genus (*vide* 'Zool. Record,' 1865, p. 728); and in the figure "instead of 5 tentacula there are only 4."

Anaitis kosteriensis, sp. n., Malmgren, *l. c.* p. 20, Koster Island, in Bahusia; described from a unique specimen.

Malmgren, *l. c.* describes the following new species of *Phyllodoce*:—*P. pulchella*, sp. n., *l. c.* p. 21, tab. 11. fig. 8, Koster Island; *P. badia*, sp. n., *l. c.* p. 22, tab. 11. fig. 6, Bahusia; *P. rinki*, sp. n., *l. c.* p. 23, tab. 2. fig. 11; *P. luetkeni*, sp. n., *l. c.* p. 24, tab. 2. fig. 10, Godhavn.

Malmgren also gives figures of the following:—*P. grœnlandica*, Œrst. tab. 2. fig. 9; *P. mucosa*, Œrst. tab. 2. fig. 7; *P. maculata* (Müll.) non Œrst. nec Johnston, tab. 3. fig. 16; *P. laminosa*, Sav., tab. 3. fig. 17.

Mysta barbata, Mgrn., is figured by Malmgren, *l. c.* tab. 3. fig. 20.

Malmgren, *l. c.*, describes the following new species of *Eteone*:—*E. liljeborgi*, sp. n., *l. c.* p. 26, tab. 3. fig. 22, Bahusia; *E. islandica*, sp. n., *l. c.* p. 27, tab. 3. fig. 23, Iceland; *E. arctica*, sp. n., *l. c.* p. 27, tab. 2. fig. 12, Spitzbergen, Finmark, &c.; *E. leuckarti*, sp. n., *l. c.* p. 28, tab. 2. fig. 15, Iceland; *E. lentigera*, sp. n., *l. c.* p. 29, tab. 2. fig. 13, Spitzbergen.

Eteone sarsii, Œrst., and *E. flava* (Fabr.) are figured by Malmgen, *l. c.* tab. 2. fig. 14, and tab. 3. fig. 21.

Chætoparia, g. n., Malmgren, *l. c.* p. 29. Corpus angustum lineare depressiusculum. Lobus cephalicus latus brevissimus subrectangularis cum segmentis buccalibus magnis prorsus coadnatus. Tentacula 4 brevissima, utrinque bina alterum super alterum in apice truncato capitis. Cirri tentaculares in segmentis buccalibus utrinque 4, inter se sejuncti, posteriores ab anterioribus longe remoti. Series minutæ transversæ, utrinque tres, setarum buccalium brevium diformium, forma sat singulari, subtus in segmentis buccalibus: par primum sub cirris tentacularibus anticis e setis paucis (4) apice cuspidato constans, par tertium setarum spiniformium paucarum (4) pone cirros tentaculares posticos et par secundum intermedium e setis numerosis inæqualibus versus apicem dilatatum sublanceolatum introrsum curvatis compositum. Appendix superior pedis lamella extrorsum et sursum porrecta. Appendix inferior lamellæformis, lateri postico partis setigeræ subacuminatæ affixa. Setæ pedis capillares compositæ spinosæ articulo terminali recto longe attenuato-acuminato. *C. nilssoni*, sp. n., *l. c.* p. 30, tab. 2. fig. 5, Bahusia.

Alciopidæ.

Claparède & Panceri describe (*l. c.*) a larval form of an *Alciope* found living in the external tissues of *Cydippe densa*, Forsk. The development of these forms was traced from a stage when the head was not distinct from the body, when there was no vestige of cephalic appendages, and no indication of the division of the body into segments, and when it was provided with cilia. The largest larval forms examined were from 5 to 10 millims. long, and were found in the stomachs of the *Cydippe*; and the authors suggest that the *Cydippe* either swallows the ova of the *Alciope* or that the young *Alciope* penetrate into the substance of the *Cydippe*. In either case, the fact of their endoparasitism is the same; and though it may seem strange that so highly developed a form as *Alciope* should be parasitic, yet may it not be that this is so, to enable the eyes and feet to have time, as well as favourable conditions, in which to develop and grow. Although it is not possible to assign such larval forms to any known genus of this family, yet as it can be even now determined that there are four antennæ and two tentacles of the oral segment, and that the first three pairs of feet differ from the rest, there can be

no doubt but they belong to an undescribed genus, and so they may be referred to by the name of *Alciopina parasitica*.

Glycerea.

Glycera nicobarica, Grübe, *l. c.* p. 24, Taf. 3. fig. 1.

Glycera alba, Rathke (vix Müll. non Johnst. nec Sars) is figured by Malmgren, *l. c.* tab. 14. fig. 82.

Glycera goësi, sp. n., Malmgren, *l. c.* p. 71, tab. 14. fig. 81, Bahusia, for *G. rouxii*, Œrsted, non Aud. & M.-Edw.

Chætopterida.

Of a new species (not as yet described) of *Chætopterus*, Jourdain (*l. c.*) records that it possesses the faculty of reintegration.

Clymenea.

Notomastus brasiliensis, sp. n., Grube, *l. c.* p. 27, Taf. 3. fig. 3, Rio Janeiro.

Dasybranchus cirratus, sp. n., Grube, *l. c.* p. 28, Taf. 3. fig. 4, Vankauri.

Psammocellus australis, Grube, *l. c.* p. 30, Taf. 3. fig. 5.

The following are figured by Malmgren, *l. c.*:—

Maldane biceps (Sars), tab. 10. fig. 58; *M. sarsi*, Mgrn. tab. 10. fig. 57.

Rhodine lovéni, Mgrn. tab. 10. fig. 61.

Nicomache lumbricalis (Fabr.), tab. 10. fig. 60.

Axiothea catenata, Mgrn. tab. 10. fig. 59.

Praxilla prætermissa, Mgrn. tab. 10. fig. 62; *P. gracilis* (Sars), tab. 10. fig. 63.

Ammocharidæ.

Ammochares assimilis, Sars, tab. 11. fig. 65.

Myriochele, g. n., Malmgren, *l. c.* p. 101. Animal tubicolum. Corpus cylindricum teres. Pars cephalica oculis, branchiis et ceteris appendicibus omnino destituta. Os anticum oblique terminale subventrale. Setæ in tribus anticis segmentis modo capillares, in ceteris sequentibus capillares et uncinatæ. Setæ capillares superiores attenuato-acuminatæ inferne leves, superne spinulis minimis adpressis biseriatis obsitæ; uncinatæ (uncini) inferiores minutissimæ manubrio lineari elongato, apice bidentatæ, dentibus binis hamuli instar curvatis, *multiseriales* aut numerosæ cingulum ventre interruptum formantes. *M. heeri*, sp. n., Malmgren, *l. c.* p. 101, tab. 7. fig. 37, Greenland, Spitzbergen, &c.

Opheliea.

Travisia elongata, sp. n., Grube, *l. c.* p. 66, Samoa Island.

Leucodorea.

Spiophanes krŏyeri, Grube, is figured by Malmgren, *l. c.* tab. 9. fig. 56.

Spio filicornis, Fabr., is figured by Malmgren, *l. c.* tab. 1. fig. 1.

Prionospio, g. n., Malmgren, *l. c.* p. 93. Corpus elongatum sublineare postice sensim paullum attenuatum. Lobus cephalicus brevis parte frontali parum elevata subrectangulari apice transversa. Antennæ nullæ. Tentaculum haud conspicuum. Oculi nulli. Tubercula setigera similia pinnis compressis parum discretis, labiis minutis, magnis foliaceis modo in segmentis 4

anticis obviis. Branchiæ paria 4, liberæ in segmentis 4 anticis obviæ, dorso adnatæ, paris primi et quarti æquales ceteris longiores pinnatæ, paris secundi et tertii multo breviores æquales filiformes. Setæ in segmentis anticis modo capillares in utraque pinna, in posticis segmentis capillares et uncinatæ in pinna ventrali, modo capillares in dorsali. Setæ capillares versus apicem attenuatum curvatum anguste limbatæ in segmentis anticis, in posticis rectæ tenuissime attenuatæ haud limbatæ. Uncini rostrati apice limbati, vertice unidentati. Seta infima rami inferioris in segmentis mediis linearis falcis instar curvata. *P. steenstrupi*, sp. n., Malmgren, *l. c.* p. 93, tab. 9. fig. 55, Iceland.

Hermellea.

Malmgren (*l. c.*) figures *Sabellaria spinulosa*, R. Leuckart, tab. 11. fig. 66; *S. alveolata*, L. = *S. anglica*, Johnst. = *Hermella alveolata*, Quat. tab. 12. fig. 70.

Terebellea.

Terebella dasycomus, Grube, *l. c.* p. 32, Taf. 3. fig. 6.

Sabellea.

Chone duneri, sp. n., Malmgren, *l. c.* p. 116, tab. 13. fig. 75, Spitzbergen.—*C. infundibuliformis*, Kr., is also figured, tab. 13. fig. 79.

Sabella paulina, sp. n., Grube, *l. c.* p. 34, Taf. 4. fig. 1, St. Paul's.

Fabricia, Blainville (1828). Malmgren (*l. c.* p. 117) states that this name having been already many times previously used in botany as a generic name, and besides having been used in entomology, must be rejected here. Likewise the name *Othonia*, Johnston (1834), being derived from a christian name, Otho (Otto), ought, both on account of its derivation and by reason of its not having gained general acceptance, to give way to *Amphicora*, Ehrenberg (1836). [We feel compelled to dissent from this reasoning, and to employ Johnston's name simply on account of its priority.]

Serpulea.

Serpula triquetra?. Mr. Alder notices the following peculiarity in the structure of the shell of a *Serpula*, possibly *S. triquetra*. Near the mouth there is an oblong bulbous swelling of the same substance as the shell, but rather less compact and more brittle. This terminates in a double arch in front. The bulbous portion consists of two cells, divided from each other by a thin wall of shell. The triangular tube of the body is continued through its base, with the mouth of the tube opening generally immediately below it. The species may be new; but the animal being absent, it is not described. Brit. Assoc. Report, 1866, p. 206.

ANNELIDA OLIGOCHÆTA.

Perichæta taitensis (Grube) is described at length and figured, *l. c.* p. 36, Taf. 4. fig. 2.

Robertson, C., describes and figures a specimen of a double earthworm (*Lumbricus terrestris*), Quart. Journ. Mic. Sci. vol. xv. p. 157, figs. 1 & 2.

ANNELIDA ONYCHOPHORA.

Grube (*l. c.* pp. 4–6) describes at length *Peripatus capensis* (Gr.), Taf. 4. fig. 3.

ANNELIDA DISCOPHORA.

Hirudinea.

Hirudo septemstriata, Grube, *l. c.* p. 37, Taf. 4. fig. 5; *H. maculosa*, Grube, *l. c.* p. 39, Taf. 4. fig. 6; *H. australis*, Besisto = *H. quinquestriata*, Sch., Grube, *l. c.* p. 39; *H.* (*Chthonobdella*) *limbata*, Grube, *l. c.* p. 41, Taf. 4. fig. 7. These species are all described in detail.

Hirudo capensis, sp. n., Grube, *l. c.* p. 38, Taf. 4. fig. 4, stagnant water between Chalk and Table Bay, Cape of Good Hope.

Hirudo limbata. Grube gives as the geographical distribution of this land-leech:—Japan, Manilla, Pelew Islands, Java, Sumatra, the regions between the Himalayas and Ceylon, South Australia; in the new world, Chili. Grube, *l. c.* p. 59.

Pontobdella? *livida*, sp. n., Packard, *l. c.* p. 291, plate 8. fig. 9, Belles Amours.

Branchellion imbricatum, sp. n., Grube, Jahresberichte der Schles. Gesellsch. f. Vaterl. Cultur, 1866, p. 61, near to *B. scolopendra*, Dies.

Nephelis quadrilineata, Grube, *l. c.* p. 43, Taf. 4. fig. 8; *N. elongata*, sp. n., Grube, *l. c.* p. 43: both these species are described in detail.

Theromyzon pallens, sp. n., Phillipi, *l. c.* p. 77, Taf. 2. fig. A, from Puerto Monti.

Dermobdella purpurea, sp. n., Phillipi, *l. c.* p. 78, Taf. 2. fig. B, taken still living while skinning a flamingo; the leech had got into the gullet.

ANNELIDA GEPHYREA.

Sipunculea.

Sipunculus gigas, *S. obscurus*, *S. vulgaris*, *S. punctatissimus*. Jourdain (*l. c.*), in continuing his researches on these species, gives a brief account of their anatomy. In the first-named species, the general cavity communicates with the exterior by an orifice, supplied with a sphincter, situated posteriorly, on which account it is proposed to make it the type of a new genus, *Sipunculoporus*, at present including but one species, *S. gigas*. Jourdain regards the cæcal tubes not as an organ of respiration, but as an organ of elimination analogous to the gland of Bojanus.

Syrinx (*Sipunculus*). A species of this genus (?), taken in 8 fathoms, sandy bottom, at Caribou Island, is briefly described, but not named, by Packard, *l. c.* p. 290, plate 8. fig. 10.

Figures of the following species of *Sipunculidæ*, accompanied by anatomical details, will be found appended to Keferstein's paper on some American species of this family (*vide* 'Zool. Record,' 1866, p. 580):—*Phascolosoma pacificum*, *P. agassizii* and var. *P. pectinatum*, *P. læve*, *P.* (*Aspidosiphon*) *truncatum*, and *P. cumanense*.

Phascolosoma hamulatum, sp. n., Packard, *l. c.* p. 290, pl. 8. fig. 8, Caribou Island &c.

SCOLECIDA

BY

E. Perceval Wright, M.A., M.D., F.L.S.

A. *Separate Publication.*

Leuckart, Rudolf. Die menschlichen Parasiten, und die von ihnen herrührenden Krankheiten. Ein Hand- und Lehrbuch für Naturforscher und Aerzte. Zweiter Band, 1. Lieferung mit 158 Holzschnitten. Leipzig, 1867, pp. 1–256.

This first part of volume 2 treats of the Round Worms; a chapter is devoted to the anatomical structure and development of the Nematoid Worms. A very detailed account is given of *Ascaris lumbricoides*, L., accompanied with clinical remarks as to the diagnosis of its occurrence and on treatment.

B. *Papers published in Journals &c.*

Baird, W., and Lamprey, J. Note on the *Spiroptera sanguinolenta* of Rudolphi, a parasite found in the Heart of Dogs in China. Journ. Linn. Soc. (November 1867) pp. 296, 297.

Barthelemy, M. Observations sur le Mémoire de M. Perez concernant le *Rhabditis terricola*. Ann. des Sci. Nat. 5e série, Zool. t. viii. 1867, pp. 37–40.

M. Barthelemy answers some of the objections raised against his paper on this Nematode by M. Perez (*vide* 'Zool. Record,' 1866, p. 603).

Cobbold, T. S. Investigations with Cestoid Entozoa. Journ. Linn. Soc. vol. ix. (January 1867) pp. 170–178.

——. Remarks on *Distoma clavatum* from a Sword-fish. Ibid. (Sept. 1867) pp. 200–205.

——. Experiments with *Trichina spiralis*. Ibid. (Sept. 1867) pp. 205–212.

——. On the prevalence of Entozoa in the Dog, with remarks on their relation to public health. Ibid. (November 1867) pp. 281–296.

Goujon, L. Expériences sur la *Trichina spiralis*, Owen. Journ. de l'Anat. et de la Physiol. 1867, pp. 529–533. (Thèse in-4.)

Grube, Prof. Ueber Landplanarien. Jahresbericht der Schles. Gesellsch. f. Vaterl. Cultur, 1866, pp. 61–64.

Maddox, R. L. Some remarks on the parasites found in the nerves &c. of the common Haddock, *Morrhua æglefinus*. Quart. Journ. Micr. Sci. vol. xv. pp. 87–99, pl. 8.

Metschnikoff, Elias. Beiträge zur Naturgeschichte der Würmer. Zeitschr. f. wissensch. Zoologie, Bd. xvii. pp. 539–544, Taf. 31.

Rasmussen, V. Bidrag til kundskab om Echinococcernes Udvikling, navnlig om Döttreblæredannelsen. Naturhist. Foren. Vidensk. Meddelelser, 1865; also reprint, pp. 29: Copenhagen, 1865.

Stieda, Ludwig. Beiträge zur Anatomie der Plattwürmer. Reichert u. Du Bois-Reymond's Archiv, 1867, pp. 52–64, Taf. 2.

Zeller, Ernst. Ueber das encystirte Vorkommen von *Distomum squamula*, Rud. im braunen Grasfrosch. Zeitschr. f. wissensch. Zoologie, Bd. xvii. pp. 215–220, Taf. 13: Mar. 21, 1867.

Cestoidea.

M. H. Krabbe's remarks on the Entozoa of man and the domestic animals in Iceland are translated in Ann. & Mag. Nat. Hist. vol. xix. 1867, p. 180; but *vide* 'Record' for 1867, pp. 603 & 606; see also a note by the same author, "Sur les Helminthes de l'homme et des animaux domestiques," Comp. Rend. lxiv. No. 3, 1867, pp. 134–138.

Dr. W. D. Moore has given an account of Dr. Rasmussen's work on the development of Echinococci, particularly with reference to the formation of daughter cells, in Journal of Anat. & Physiol. vol. i. p. 183, from which we ascertain that the author's investigations confirm the view put forward by Leuckart, that the scolex-formation always proceeds in brood-capsules developed from the parenchymatous layer of the mother cell and being in continual connexion with the same. The daughter cells are formed either endogenously or exogenously with respect to the mother cell; but these two forms are not strictly separated, and may often be developed together: in cells which are developed endogenously, new cells may be again produced both endogenously and exogenously. Scoleces in the daughter cells do not exhibit any other than individual differences from those which are formed in the mother cells. All scoleces in a compound echinococcus-cyst are equally adapted for development, under certain conditions, to the state of *Tænia echinoccus*.

Dr. Cobbold (*l. c.*) gives an account of a series of experiments in which the proglottides of several species of *Tænia* were administered to calves, young dogs, and pigs. Dr. Cobbold succeeded in rearing *T. mediocanellata*, *T. serrata*, *T. marginata*, and *T. cœnurus*, but not either *T. echinococcus* or *T. solium*.

Bothriocephalus latus. Dr. Stieda (*l. c.*) corrects a mistake that he, in common with Leuckart & Böttcher had made, confounding the cells of the

"Knäueldrüse" with ova; but the Knäueldrüse of *B. latus* is a conglomerate of pear-shaped cells, which are imbedded in the connective tissue, quite distinct from the rounder cells of the ova with their large nucleus.

The following Entozoa are recorded by Dr. Cobbold (*l. c.*) as found in the dog:—*Holostoma alatum*, Nitzsch; *Spiroptera sanguinolenta*, Rud.; *Dochmius trigonocephalus*, Duj.; *Trichosoma plica*, Rud.; *Trichocephalus depressiusculus*, Rud.; *Trichina spiralis*, Owen; *Ascaris marginata*, Rud.; *Eustrongylus gigas*, Dies.; *Bothriocephalus latus*, Brem.; *B. cordatus*, Leuck.; *B. fuscus*, Krabbe, var. *reticulatus*, Krabbe, var. *dubius*, Krabbe; *Tænia marginata*, Batsch; *T. cœnurus*, Küch.; *T. cucumerina*, Bloch; *T. serrata*, Goeze; *T. litterata*, Batsch; *T. echinococcus*, Siebold; *Pentastoma tænioides*, Rud.; and, as larval forms, *Cysticercus* (*telæ*) *cellulosæ*, *Filaria trispinulosa*, and *F. sanguinis*. Many very interesting facts are given in connexion with these parasites, and some remarks are made as to the bearing of the subject on its relation to public health.

Trematoda.

Distoma hepaticum. Dr. Stieda (*l. c.*) gives an account of the anatomy of this species, criticising some of the statements of Leuckart in his 'Die menschlichen Parasiten.' These anatomical details do not admit of being condensed.

Distoma clavatum was met with by Dr. Cobbold (*l. c.*) in the stomach of *Xiphias gladius*, stranded at Lynn, Norfolk, in August 1865; the synonymy of this species is given as *D. clavatum*, Rudolphi = *D. coryphænæ*, Rud. = *D. gigas*, Nardo = *Fasciola clavata*, Menzies = *F. coryphænæ*, Bosc = *F. fusca*, Bosc = *Hirudinella marina*, Garsin = *H. clavata*, Baird.

Distoma squamula, Rud. Dr. Zeller (*l. c.*) states that in the skin of the brown tree-frog he finds very many peculiar little elevations (Knötchen) which do not appear to be as yet described. Out of sixty frogs, which he received from Tübingen, better than two-thirds were found with these little skin-tumours. From thirty to fifty, and even sometimes a hundred, were met with in the same frog. They were met with over the whole surface of the body, more especially on the hind legs, on the webbing of the toes, and on the belly. They lie just under the skin, were about the size of a common pin's head, and some were of a whitish, others of a more or less brown or black colour. They rest in the thickness of the cutis, where they form a small cyst. In this cyst is found the *Distomum*, which appears to correspond with the *D. squamula* of Rudolphi.

Dr. Maddox (*l. c.*) gives very full anatomical details of the parasite found in the nerves of the common haddock, suggesting that it is probably the *Distoma neuronaia* of Monro, and that it may be but a lower phase in the development of *Gasterostoma gracilescens* (Wagener) found in the intestines of *Lophius piscatorius*, which is known to feed upon haddock and cod.

Trichina spiralis. Dr. Cobbold details a series of experiments with this nematode, in which he was assisted by Professors Simonds and Pritchard. The results obtained by feeding birds on the Trichinæ were negative. The Trichinæ were given in an encysted state. A goose that had been fed four times on the Trichinæ was afterwards eaten by Dr. Cobbold without hesitation, and, we hope, with impunity. A chicken would have followed the same fate, but was found too tough.

Dr. KALMUS records a case of Trichinosis as occurring in Brünn, Verhand. des naturfors. Verein in Brünn, Bd. v. 1866, pp. 173–183.

A quantity of flesh containing Trichinæ in an *encysted* condition was administered to a rabbit, two guinea-pigs, two rats, a dog, a bird of prey, and two frogs, while some flesh containing Trichinæ in a *non-encysted* condition was given to the same number of the same species of vertebrates. Thirty-six days after, all the animals were killed and carefully examined, and were *all* found infested with Trichinæ; but while those in the first category who had fed on encysted Trichinæ were found to contain large numbers of the parasite (the rabbit, guinea-pigs, and rats had their muscles riddled with them), those in the second category were found to have so few as to require a very accurate search to discover them. A number of experiments were also tried on rats, with the object of determining how the Trichinæ entered the muscular system, and with the result that the blood is in all probability *not* the vehicle of their transport; but that the minute worms, gliding with great facility amid the fibres of the intestinal tunics, pierce into all the regions of the body. The dog, birds of prey, and reptiles, believed not to be capable of being infected, are now proved to be subject to infection as other animals. Pregnant animals fed on Trichinæ did not infect their offspring. Out of thirty-two rats caught in Paris three were found infected, though living in a wild condition. Of 267 subjects examined between 7th April and 4th July 1866 none were found to contain Trichinæ. Goujon, *l. c.* p. 529 *et seq.*

NEMATOIDEA.

Ascaris lumbricoides (L.). A detailed account of the anatomy and development of this worm will be found given by Leuckart, *l. c.*

Rhabditis terricola. Prof. Claparède gives, in the Bibl. Univ. Oct. 25, 1867, a notice of a thesis presented to the Faculty of Sciences of Paris by J. Perez, which is translated in Ann. & Mag. Nat. Hist. vol. xx. 1867, pp. 454–455. The phenomena described by Perez in connexion with the development of the *Rhabditides* are quite similar to those described by Leuckart and Mecznikow, and so guarantee their correctness. He concludes that the females are fitted to reproduce parthenogenetically. Leuckart and Mecznikow regard the sexual *Rhabditides* as alternating with a generation of parthenogenetic *Ascarides* deprived of males, while Schneider assumes the alternation of a generation with separate sexes (*Rhabditides*) with an hermaphrodite generation (*Ascarides*). Perez's views would appear to coincide with those of Leuckart and Meczinkow, though, as he does not seem to have suspected the existence of hermaphrodite Nematodes, it may still be questioned whether the denomination parthenogenetic females, which he applies to these worms, is altogether above discussion.

Spiroptera sanguinolenta, Rud. Dr. Jones Lamprey (*l. c.*) records finding this parasite in the cavities of the ventricles of the heart in both the native and foreign dogs living at Shanghai. The specimens which were sent to Dr. Baird for examination were many of them ten inches long. Those described by Rudolphi, Dujardin, and Diesing would appear to have been only from one and three quarters to three inches in length.

Chætosoma claparedii, sp. n., Metschnikoff, *l. c.* p. 539, Salerno, the seashore among algæ, Taf. 31. fig. 1 (adult female), fig. 2 (adult male).

Rhabdogaster cygnoides, sp. n., Metschnikoff, *l. c.* p. 542, Salerno, Taf. 31. fig. 9 (adult female).

Balanoglossus. Kowalewsky's paper on the anatomy of this worm is abstracted in Ann. & Mag. Nat. Hist. vol. xx. 1867, pp. 230–232 (*vide* 'Record,' 1866, p. 610).

Turbellaria.

Bipalium univittatum, Grube, *l. c.* p. 45. fig. 9. This species is very close to *B. ferudporensis*, P. Wright.

Mesostomum personatum, Sdt. The Rev. W. Houghton mentions the occurrence of this Rhabdocœl Planarian in a reedy pond near Preston (Ann. & Mag. Nat. Hist. vol. xx. 1867, p. 449). At first he had thought it might be a new species, *nigra*, of the genus *Typhloplana* (*vide* ibid. p. 300).

Semper (*vide posteà* p. 644), in treating of the parasites of the Holothuroids, mentions having found, in the intestine of *Stichopus variegatus*, Semp., and *Mülleria lecanora*, Jäg., specimens of a species of *Anoplodium*, which he calls, after the describer of this genus, *A. schneideri*.

Cerebratulus cylindricus, sp. n., Packard, *l. c.* p. 291, pl. 8. fig. 11, one specimen at Belles Amours.

Dr. McIntosh describes a gregariniform parasite met with in *Borlasia octolineata*, as well as in large examples, from South Devon, of *Lineus lactea*, Montagu. Quart. Journ. of Mic. Science; Trans. R. Mic. Soc. 1867, p. 38, pl. 2.

ECHINODERMATA

BY

E. Perceval Wright, M.A., M.D., F.L.S.

A. *Separate Publications.*

Gray, J. E. Synopsis of the species of Starfish in the British Museum (with figures of some of the new species). London, J. Van Voorst, 1866 (published in 1867), 4to, pp. iv and 1–18, tabb. 1–16.

In the 'Annals & Magazine of Natural History' for November and December 1840, Dr. Gray published a "Synopsis of the Genera and Species of the Class Hypostoma (*Asterias*, Linn.)," and in the 'Proceedings of the Zoological Society' for May 1847 he described some new genera and species of *Asteriadæ*. The former paper was intended as a prodromus to a work giving figures of all the genera and most of the species of the class; but many things prevented the work from being proceeded with; and as several of the plates represent species figures of which have not hitherto been published, Dr. Gray now publishes them, accompanied by a synopsis, which is nearly the same as that published in 1840, but with synonyms added to the list of species. He mentions in the Introduction that many of Mr. Cuming's specimens, on which some of the species were founded in his paper of 1847, were lost on the distribution of the Zoological Society's museum. The plates are perhaps the most beautiful that have been as yet published of Starfishes.

Semper, C. Reisen im Archipel der Philippinen. Zweiter Theil. Wissenschaftliche Resultate. Erster Band. Holothurien. 4to, Heft i., ii., iii., pp. 1–100, with 25 plates, of which 16 are coloured. Leipzig, 1867.

During a seven years' sojourn amongst the Phillipine group of islands, Dr. Semper made large collections of natural-history objects, also obtaining, partly by his own labour, partly by the assistance of Mrs. Semper, many hundred coloured drawings of invertebrate animals. This volume on the Holothuroids is but the first of a series which the author intends publishing on the Natural History of the Philippines, and it contains, in addition to a description of all the species met with by Dr. Semper, an

annotated list of all the known species, with descriptions of many new species not met with in the Philippines, and anatomical remarks on each of the families. The coloured drawings are the most faithful representations of this class of Echinoderms that have yet appeared. One part more will complete the first volume, which will then contain thirty plates.

B. *Papers published in Journals &c.*

Carpenter, W. B. Researches on the structure, physiology, and development of *Antedon* (*Comatula*) *rosaceus*. Part I. Phil. Trans. vol. clvi. 1866, pp. 671–756, plates 31–43.

Jourdain, S. Recherches sur l'appareil circulatoire de l'étoile de mer commune (*Asteracanthion rubens*). Compt. Rend. lxv. No. 24, 1867, pp. 1002–1004.

Ljungman, A. Ophiuroidea Viventia huc usque cognita. Œfvers. af k. Vet.-Akad. Förh. No. 9, 1866, pp. 303–336.

In this enumeration of all the known species of the order *Ophiuroidea*, Ljungman proposes some new genera and species. Separate copies of this useful catalogue have been circulated by Professor Lovén, containing a note of those species wanting in the museum at Stockholm and of those species of which they have duplicates. Twenty species of the order *Euryalæ* and 201 of the order *Ophiuræ* are enumerated.

Lovén, S. Om *Leskia mirabilis*, Gray. Œfvers. af k. Vet.-Akad. Förh. 1867, No. 5 (read May 8, 1867), pp. 1–10 (reprint), with a woodcut.

Martens, E. von. Ueber ostasiatische Echinodermen. (Fortsetzung.) Archiv f. Naturg. Jahrgang xxxiii. Bd. i. pp. 106–119, Taf. 3.

Morales, S. A. de. *Euryale asperum*, Lam. Anuario del Lyc. de Matanzas, Año 1, tom. i. 1866, pp. 272–274. [Notes the occurrence of this species in the Bay of Matanzas.]

Selenka, E. Beiträge zur Anatomie und Systematik der Holothurien. Der Philosophischen Facultät zu Göttingen in December 1866, als Dissertation vorgelegt. Leipzig, 1867. Also as a separate reprint in Zeitschr. wissensch. Zoologie, Bd. xvii. pp. 291–374, Taf. 17–20: 21. März 1867.

In writing this monograph, the author has had the opportunity of consulting not only the large collection of species in the Museum of Göttingen, but also the entire collection of Holothuridæ of the Museum of Cambridge, Mass., forwarded by Mr. A. Agassiz, and the collection of Professor Keferstein. The author, adopting the classification of Brandt, enumerates four families belonging to the two orders Pneumonophora and Apneumona, *i. e.*, 1. *Aspidochirotæ*, Brdt.; 2. *Dendrochirotæ*, Brdt.;

3. *Molpatidæ* (for the footless Pneumonophora); and, 4. *Synaptidæ*. A number of new genera and species are described, which will be alluded to in the special portion of this Record. An index to both the genera and species accompanies this paper.

Selenka, E. Nachtrag zu den Beiträgen zur Anatomie und Systematik der Holothurien. Zeitschr. f. wissensch. Zoologie, Bd. xviii. pp. 109–119, Taf. 8: December 26, 1867.

In this appendix we have descriptions of two new genera, several new species, and corrections of the synonymy of the original paper.

Verrill, A. E. Notes on the Radiata in the Museum of Yale College. No. 1. Descriptions of new Starfishes from New Zealand. No. 2. Notes on the Echinoderms of Panama and West Coast of America, with descriptions of New Genera and Species. No. 3 (marked as published July 1867). On the Geographical Distribution of Echinoderms of the Pacific Coast of America. Trans. Connecticut Acad. of Arts & Sciences, vol. i. part 2, March 1867, pp. 247–351.

Geographical Distribution and Local Lists.

Verrill (*l. c.* pp. 323–351) gives a very elaborate account of the geographical distribution of the Echinoderms of the west coast of America. The faunal divisions indicated by the information already received would appear to be the following:—Sitchian, Oregonian, Californian, Panaman, Galapagos (perhaps this should be united to the Panama province), Peruvian, Chilian, Araucanian, and Fuegian.

A comparison is also instituted between the tropical faunæ of the east and west coasts of America; and very complete lists of the species found on both coasts are given side by side (pp. 341–347). These lists contain 125 species from the Caribbean and 82 from the Panaman fauna; and, excluding the Holothurians, it would appear that no species has ever been indicated as common to the two coasts. The apparent absence of Comatulidæ and other Crinoidea from the Panaman fauna is very curious. Species may, however, yet be discovered. However interesting the details of this portion of Professor Verrill's paper, space will not allow us to give it in further detail.

Rev. A. Merle Norman records (Brit. Assoc. Report, 1866, p. 195) the following Echinoderms as taken in the Hebrides:—

Antedon rosaceus, Linck, and *A. celticus*, Barrett. The latter species was found in the Minch, living gregariously in about sixty fathoms; it was also met with in Sleat Sound, but sparingly.

Ophiura lacertosa, Penn.; *O. albida*, Forbes; *O. affinis*, Lüt. = *O. normani*, Hodge; *Ophiopholis aculeata*, Müll.; *Ophiocoma nigra*, Müll.; *Amphiura balii*, Thomp.; *A. elegans*, Leach; *A. filiformis*, Müll.; *A. chiajii*, Forbes.

Asterias rubens, Linn.; *A. hispida*, Penn; *Stichaster roseus*, Müll.; *Cribrella sanguinolenta*, Müll.; *Solaster papposus*, Linn.; *Palmipes placenta*, Penn.; *Porania pulvillus*, Müll.; *Astropecten irregularis*, Penn.

Echinocardium ovatum, Leske; *Brissopsis lyrifera*, Forbes; *Echinocyamus pusillus*, Müll.; *Echinus esculentus*, Linn.; *E. flemingii*, Ball; *E. miliaris*, Leske.

Holothuria intestinalis, Ascanius, in the Minch, living in about sixty fathoms; *Psolus phantapus*, Linn.; *Thyone fusus*, Müll.; *Th. raphanus*, Düb. & Kor.; *Thyonidium commune*, Forbes & Goods. (?); *Th. hyalinum*, Forb.; *Cucumaria lactea*, F. & G.; *C. fusiformis*, F. & G. (= *C. elongata*, Düb. & Kor.); *C. hyndmanni*, Thomp.

In continuation of his papers on East-Indian Echinoderms, Dr. E. von Martens enumerates the following:—

1. *Echinaster purpureus* (Gray) = *Othilia purpurea* and *O. luzonica*, Gray = *Echinaster fallax* and *E. cridanella*, Müll. & Tros., Amboina (3 found, 2 with 6 arms, 1 with 5 arms); 2. *E. solaris* (Schmidel), Zamboanga; 3. *Linckia* (*Metrodira*) *subulata* (Gray), Amboina; 4. *Gymnasteria carinifera*, Lam., Zamboanga; 5. *Goniaster pentagonulus*, Lam., same locality; 6. *G. equestris*, Retz.; 7. *Archaster hesperus*, M. & Tr.; 8. *Spatangus planulatus*, Lam., Taf. 3. fig. 1.

Verrill (*l. c.*) enumerates the following species as from Panama. Remarks of more or less importance are appended to each species, and when quoting the species of Lütken the original descriptions are given in English:—

Ophiura teres, Lyman, *O. panamensis* (Lüt.), *O. variegata* (Lüt.); *Ophiolepis variegata*, Lüt.; *Ophiozona pacifica* (Lüt.); *Ophiocoma æthiops* (Lüt.), *O. alexandri*, Lyman; *Ophionereis annulata* (Leconte, 1851), *O. triloba* (Lüt., 1856); *Ophiocnida hispida* (Leconte, 1851); *Amphiura geminata* (Leconte), *A. violacea*, Lüt., *A. puntarenæ*, Lüt.; *Ophiactis kröyeri*, Lüt., *O. virescens*, Lüt., *O. simplex*, Lüt., *O. arenosa*, Lüt.; *Ophiothrix spiculata*, Leconte.

Anatomy and Physiology.

Asteracanthion rubens. Jourdain, *l. c.*, in giving a brief sketch of the circulatory system of this Starfish, states that, in spite of researches carefully conducted for a lengthened period, he has been unable to discover the complex vascular system generally admitted by anatomists on the faith of the researches of Tiedemann and Volkmann. Their supposed heart would appear to be but a glandular organ. The author describes the collection of vascular cavities as an ambulacral hydrolymphatic system which communicates with the exterior, consisting of an oval ring situated below the nervous collar, which receives five canals and communicates with the hydrophore tube (sand canal). In short, the ambulacral system is regarded as an accessory to respiration, to be employed when the Starfish, being uncovered by by the water, cannot employ its respiratory cæca.

Brief notes of a paper on the structure of the spines of Echini, by H. A. Hurst, will be found in Quart. Journ. Mic. Scien. vol. xv. 1867, pp. 92–94.

Crinoidea.

Antedon rosaceus. Dr. Carpenter describes this species from the stage to

which it had been traced by Wyville Thomson (*vide* Zool. Record, 1865, p. 753) to its adult form, and gives very elaborate figures of the different portions of its skeleton. Phil. Trans. 1866, vol. clvi. pp. 671–756, pls. 31–43.

Ophiuroidea.

Ophiodermatidæ.

Ophioderma (*Ophiura*) *daniana*, sp. n., Verrill, *l. c.* p. 254, La Union, San Salvador.

Ophiarachna stellata, sp. n., Ljungman, *l. c.* p. 305, Singapore; *O. spinosa*, sp. n., Ljungman, *l. c.* p. 305, Island Foua.

Ophiolepidæ.

Ophioglypha multispina, sp. n., Ljungman, *l. c.* p. 307, Sydney.

Ophiopus, g. n., Ljungman, *l. c.* p. 309. Discus scutis radialibus et squamis nudis tectus. Incisuræ disci obsoletæ, papillis destitutæ. Papillæ orales paucæ in ordine duplici dispositæ. Scuta radialia minuta, sejuncta, extus bina vel singula scutellorum brachialium dorsalium intimorum amplectantia. Scuta oralia trigona margine aborali valde curvato vel late angulato pyriformia, parum longiora quam latiora et in spatiis interbrachialibus vix prolongata. Hoc genus inter *Ophioglyphas* et *Amphiuras* medium tenet locum.

O. arcticus, sp. n., *l. c.* p. 309, Spitzbergen.

Amphiuridæ.

Ophiomeris squamata, sp. n., Ljungman, *l. c.* p. 310, Honolulu; *O. crassispina*, sp. n., Ljungman, *l. c.* p. 311, Honolulu.

Amphipholis. The following new species are described by Ljungman:—*A. depressa*, *l. c.* p. 312, Port Natal; *A. hastata*, *l. c.* p. 313, Mossambique; *A. grisea*, *l. c.* p. 313, Guayaquil; *A. impressa*, *l. c.* p. 314, deep water between Batavia and Singapore; *A. albida*, *l. c.* p. 314, near Rio Janeiro; *A. subtilis*, *l. c.* p. 314, same locality as last; *A. lobata*, *l. c.* p. 315, Sydney.

Ophiophragmus antarcticus, sp. n., Ljungman, *l. c.* p. 315, Straits of Magellan; *O. gibbosus*, sp. n., Ljungman, *l. c.* p. 316, Port Natal; *O. echinatus*, sp. n., Ljungman, *l. c.* p. 316, between Singapore and Batavia.

Amphiura. The following new species are described by Ljungman, *l. c.*:—*A. divaricata*, p. 318, between Batavia and Singapore; *A. eugeniæ*, p. 318, La Plata, near mouth of; *A. candida*, p. 318, Mossambique; *A. complanata*, p. 319, Atlantic Ocean, long. E. 40° 55′, lat. S. 22° 30′; *A. crassipes*, p. 319, hab. as last; *A. flexuosa*, p. 319, Brazil; *A. verticillata*, p. 320, Galapagos; *A. capensis*, p. 320, Natal and Cape; *A. magellanica*, p. 320, Straits of Magellan; *A. latispina*, p. 320, La Plata; *A. atlantica*, p. 321, St. Helena.

Ophiocentrus, g. n., Ljungman, *l. c.* p. 321. Discus, parte scutorum radialium minuta, nuda excepta, totus cute molli tectus et in dorso aculeis erectis instructus. Papillæ ambulacrales desunt.

O. aculeatus, *l. c.* p. 321, deep water between Singapore and Batavia.

Amphilepis, g. n., Ljungman, *l. c.* p. 322, for *Amphiura norvegica*, Ljung.

Hemipholis affinis, sp. n., Ljungman, *l. c.* p. 322, Guayaquil.—*H. gracilis*, sp. n., Verrill, *l. c.* p. 262 (closely allied to *H. cordifera*, Lyman), Panama.

Ophiactis carnea, sp. n., Ljungman, *l. c.* p. 324, Port Natal.

Ophiacantha indica, sp. n., Ljungman, *l. c.* p. 326, deep water between Singapore and Batavia.

Ophiotrichidæ.

Ophiocnemis obscura, sp. n., Ljungman, *l. c.* p. 333, Straits of Malacca.

Ophiothrix (*Ophiothela*) *mirabilis*, sp. n., Verrill, *l. c.* p. 268, Pearl Islands, Bay of Panama, clinging to a branched sponge and to Gorgoniæ.

Ophiothela, g. n., Verrill, *l. c.* p. 269. This genus is founded for a group of Ophiurians agreeing:—in having the upper arm-plates covered with granulations as in *Astrophyton*; in having short, rough arm-spines, mostly turned downwards, and armed with roughnesses or hooks beneath, as in *Ophiactis* in having very large radial shields covering most of the disk, the intervening spaces being covered with a skin bearing simple spines; lower side of arms and disk covered with a skin, more or less obscuring the plates; mouth-shields and side mouth-shields united into a ring around the mouth; six arms; clinging to *Gorgoniæ*. This genus is somewhat intermediate between *Ophiothrix* and *Ophiactis*, more nearly to the former.

Astrophytidæ.

Astrophyton panamense, sp. n., Verrill, *l. c.* p. 251, Panama and Pearl Islands, adhering to *Muriceæ*. It appears to be most nearly allied to *A. caryi*, Lyman, from San Francisco.

Asteroidea.

Asteriidæ.

Heliaster helianthus, Gray, *H. cumingii*, Gray, *H. microbrachia*, Xantus, and *H. kubiniji*, Xantus, are described by Verrill, *l. c.* pp. 289–293.

Mithrodia bradleyi, sp. n., Verrill, *l. c.* p. 288, Panama. Verrill states that this species shows the propriety of retaining Gray's genus *Mithrodia*, which was established for *Asterias clavigera* (Lam.).

Astropectinidæ.

Astropecten fragilis, sp. n., Verrill, *l. c.* p. 272, Panama; very near to *A. regalis*, J. E. Gray, which is here described (p. 273) as from Panama. Is *A. cœlacanthus*, Martens, identical with this species?

Astropecten peruvianus, sp. n., Verrill, *l. c.* p. 275, Paita, Peru. Is this *A. stellatus*, J. E. Gray?

Astropecten œrstedii, Lütk., is described by Verrill, *l. c.* p. 274, from Panama; *A. edwardsii*, Verrill, *l. c.* p. 251.

Luidia tessellata, Lütk., and *L. bellonæ*, Lütk. Verrill, *l. c.* pp. 271 & 293, describes specimens from Panama.

Cœlasterias, g. n., Verrill, *l. c.* p. 247. Large starfishes, with four rows of ambulacral suckers and large swollen rays (eleven in the typical species), which are free to near the base and are united beneath by a group of interradial plates. Interambulacral plates united directly to the first row of ventral plates, and these to a second row of larger plates, without the intervention of open spaces like those seen in *Asterias*. Dorsal surface with large, strong, imbricated, irregularly arranged ossicles or plates, bearing short, very numerous spines. This genus is more closely allied to *Asterias* (*Asteracanthion*) than to *Heliaster*, and approaches still nearer to *Stichaster*, but appears very distinct from either; its form and general aspect is that of a *Solaster*. *C. australis*, sp. n., Verrill, *l. c.* p. 247, Auckland.

Coscinasterias, g. n., Verrill, *l. c.* p. 248. Starfishes with many rays, which are elongated, slender, and united only at the base, without interradial plates beneath; disk small; ambulacra broad, highly developed, suckers very numerous, in four rows; spines prominent, arranged in longitudinal rows on the rays; dorsal surface with large scattered pedicellariæ; madreporic plate large, irregular, often with several accessory ones placed irregularly on various parts of the disk; dorsal plates (ossicles) arranged much as in *Asterias*. *C. muricata*, sp. n., Verrill, *l. c.* p. 249, Auckland.

Pentacerotidæ.

Oreaster occidentalis, sp. n., Verrill, *l. c.* p. 278, Panama. Allied to *O. gigas*, and may be the adult condition of *Oreaster* (*Pentaceros*) *cumingii*, Gray.

Oreaster (*Nidorellia*, Gray) *armatus*, Gray, Verrill, *l. c.* p. 280. Eight specimens of this species were found. To the synonymic list add *Goniodiscus conifer*, Möbius, Neue Seesterne, p. 10, Taf. 3. figs. 5 & 6.

Goniodiscus stella, sp. n., Verrill, *l. c.* p. 284, Cape St. Lucas. Verrill seems to think that this species will eventually prove to be but the young of *Nidorellia armata*. The trivial name has been already applied by Möbius to a species of this genus from the West Indies which is certainly not *G. stella* of Verrill and is, according to Gray, very nearly related to his *Tosia grandis*.

Ophidiaster (*Pharia*) *pyramidatus* (Gray) is described by Verrill, *l. c.* p. 287. It occurs through the whole extent of the Panamic zoological province.

Linckia unifascialis (Gray), from Panama, is described by Verrill, *l. c.* p. 285.

Asterinidæ.

Asterina (*Asteriscus*) *regularis*, sp. n., Verrill, *l. c.* p. 250, Auckland.

Asterina (*Asteriscus*) *modesta*, sp. n., Verrill, *l. c.* p. 277, Panama.

Patiria obtusa, Gray, from Panama, is described by Verrill, *l. c.* p. 276.

Pteraster cribrosus, sp. n., Martens, *l. c.* p. 109, Taf. 3. fig. 2, found near Zanzibar.

Echinoidea.

Cidaridæ.

Cidaris thouarsii, Agas. & Des., described by Verrill, *l. c.* p. 294, from Panama.

Diadematidæ.

Echinodiadema, g. n., Verrill, *l. c.* p. 295. Test depressed, circular; actinal cuts slight; buccal membrane with five principal groups of oblong scales, bearing numerous slender spines and pedicellariæ; ambulacral pores trigeminate, the poriferous zones wider beneath, where the rows of three pairs are more transverse; tubercles arranged much as in *Diadema*, two principal rows in the ambulacra and four in the interambulacra, of which the external ones are smaller and border the poriferous zones; anal membrane small, covered with small scales: spines long, slender, hollow, externally resembling those of *Diadema*.

Echinodiadema coronata, sp. n., Verrill, *l. c.* p. 295, Cape St. Lucas.

Astropyga venusta, sp. n., Verrill, *l. c.* p. 296, Panama. Verrill states it

has probably been confounded with *A. radiata* of Zanzibar and the Indian Ocean.

Arbacidæ.

Echinocidaris stellata (Blainv. sp.) and *E. spatuligera* (Val. sp.) are described by Verrill, *l. c.* pp. 298–301. Verrill quotes *E. longispina*, Lüt. 1864, and *E. incisa*, A. Agas. 1863, as synonyms of *E. stellata*.

Echinidæ.

Psammechinus pictus, sp. n., Verrill, *l. c.* p. 301, Cape St. Lucas.

Lytechinus roseus (A. Agas. sp.) is described by Verrill, *l. c.* p. 302.

Boletia viridis, sp. n., *l. c.* p. 304, Callao, Peru.

Eurychinus imbecillis, Verrill, *l. c.* p. 305. This species may be the *Echinus* (*Toxopneustes*) *gibbosus*, Agas. Nearly every specimen examined was irregular in outline. This irregularity, which often amounts to gibbosity, is irregular and inconstant, and is caused by a small parasitic crustacean (*Fabia chilensis*, Dana; *Pinnaxodes hirtipes*, Heller, appears to be the same species). The parasite would appear to force an entrance into the anal orifice when quite small, and causes a dilatation and malformation of the intestine, which eventually forms a membranous cyst. In one instance this cyst was an inch in length and half an inch in diameter, and enclosed a female crab of corresponding size. A large opening is maintained externally, out of which the claws of the crab may be thrust (but not large enough to allow it to go entirely out when fully grown).

Echinometridæ.

Echinometra rupicola and *E. van-brunti*, A. Agas., are described by Verrill, *l. c.* pp. 308, 309, the former from Panama and Peru, the latter from Acapulco.

Scutellidæ.

Encope occidentalis, Verrill, *l. c.* p. 309 = *E. tetrapora*, Agas. non Gmelin, Panama.

Encope aberrans, sp. n., Martens, *l. c.* p. 112, Campeche Bay, West Indies.

Mellita pacifica, sp. n., Verrill, *l. c.* p. 313, Zorritos, Peru.

Astriclypeus, g. n., Verrill, *l. c.* p. 311. Ambulacral star as in *Encope*; four genital openings, the posterior one wanting, as in *Mellita*; with five lunules or perforations in the prolongations of the ambulacra, as in *Encope*, but destitute of any perforation or indentation in the posterior interambulacrum, like *Lobophora*. Anal opening round, about midway between the mouth and margin. Sulcations of the lowerside more simple than in *Encope*, a primary branch passing along close to the openings on each side, and sending off numerous inconspicuous branches to the interambulacra. Actinal opening as in *Encope*.

Astriclypeus manni, sp. n., Verrill, *l. c.* p. 311, west coast of North America (?).

Cassidulidæ.

Pygorhynchus pacificus (Ag. MS.) is described by Verrill, *l. c.* p. 315, from Acapulco and Cape St. Lucas.

Cassidulus caribbearum, Lamk. The genus *Rhynchopygus* was established

by Lütken for this species. Verrill, *l. c.* p. 316, thinks that, as this species was the type of the genus *Cassidulus* when first established by Lamarck, the the genus should be restricted to species like it.

Nucleolites epigonus, Martens, is figured in Taf. 3. fig. 3 of Wiegm. Archiv f. Naturg. xxxiii. Jahrg. 1. Bd.

Spatangidæ.

Brissus obesus, sp. n., Verrill, *l. c.* p. 316, Gulf of California.

Meoma nigra (A. Agas. sp.), near *M. grandis*, Gray, Acapulco, Verrill, *l. c.* p. 317.

Metalia nobilis, sp. n., Verrill, *l. c.* p. 319, Panama Bay.

Palæostomidæ, Gray.

Leskia (*Palæostoma*, Gray) *mirabilis*, Gray, is redescribed by Lovén (*l. c.*). Dr. J. E. Gray's specimen was from the Island of Luzon; those described by Prof. Lovén were obtained by Mr. Kinberg in the Indian seas, between Singapore and Batavia. We may observe that this species has been taken by Dr. W. Stimpson "in 20 f. mud, near Gr. Lema, off the coast of China, near Hong-Kong. Dead specimens show that it grows to a length of 3 inches. Of a pale straw-colour, feet blood-red" (Proc. Acad. Nat. Science Phil. Dec. 1863, p. 300). While intimately allied to the Spatangidæ, it is distinguished and, indeed, becomes the type of a new family, by the peristome and periproct being closed up by a small series of triangular converging valves, those of the anal orifice having some small spicules in the centre; but for the oral and anal orifices, *Leskia* would be a true Spatangoid; but no living Echinoid discovered up to this time has such an oral opening. Professor Lovén describes *Sphæronites pomum* and *Echinosphærites aurantium*, and draws the conclusion that in *Leskia mirabilis* we have a *Spatangoid* with the mouth of a *Cystidean*, thus justifying Dr. Gray's original suggestion when first describing the genus.

Holothuroidea.

Pneumonophora.

Aspidochirotæ.

Selenka (*l. c.*) describes as a new genus *Labidodemas*, *l. c.* p. 309. Feet in five distichous rows: tentacles twenty. *L. semperianus*, sp. n., p. 309, Taf. 17. figs. 1–3, Sandwich Isles.

Labidodemas selenkianum, sp. n., Semper, *l. c.* p. 77, Viti Isles.

Selenka describes the following new species of *Mülleria*, Bdt.:—*Mülleria rarians*=*M. mauritiana*, Q. & G. *l. c.* p. 310, Taf. 17. figs. 4–9, Viti, Sandwich, and Friendly Isles. [In a specimen of this species a great number (60) of small, elastic, bladder-like bodies were found hanging round the circular canal, and full of isolated ellipsoidal cells; the upper end was spathiform, the under attached by a long thread. These bodies were not met with in any other examples of this species, many of which were examined with this object in view; but they were once again met with in a specimen of *M. plebeja* from Zanjibar.] *M. obesa*, *l. c.* p. 312, Sandwich Isles; *M. nobilis*, *l. c.* p. 313, Taf. 17. fig. 13–15 (of the specimens examined, those with white spots came from Zanjibar, and those quite black from the Sandwich Isles); *M. ra-*

dians, *l. c.* p. 313, Taf. 17. fig. 16, very near the last species, Friendly Islands; *M. formosa*, *l. c.* p. 314, Taf. 17. fig. 19 *a*, *b*, *c*, Makassar; *M. parvula*, *l. c.* p. 314, Taf. 17. figs. 17 & 18, Florida.

Mülleria lecanora, Jäg., *M. nobilis*, Sel., and *M. mauritiana*, Q. & G., are mentioned by Semper, *l. c.* pp. 75–77, as found in the Philippines.

Stichopus naso, sp. n., Semper, *l. c.* p. 72, cum figg., Bohol, eight to fifteen fathoms deep; *S. variegatus*, sp. n., Semper, *l. c.* p. 73, cum figg., Philippines; and var. *herrmanni* of the same species, cum figg.

The following new species not from the Philippines are also described by Semper, *l. c.*:—*S. haytiensis*, sp. n., *l. c.* p. 75, tab. 30. fig. 5, Hayti; *S. godefroyi*, sp. n. *l. c.* p. 75, tab. 30. fig. 4, Samoa, and a variety of this species from th Viti Isles.

Selenka (*l. c.*) describes the following species of *Stichopus*, Bdt.:—*S. badionotus*, *l. c.* p. 316, Taf. 18. fig. 26, Florida; *S. horrens*, *l. c.* p. 316, Taf. 18. figs. 27–29, Friendly Islands; *S. rigidus*, *l. c.* p. 317, Taf. 18. figs. 30–34, Zanjibar, Friendly Islands, Florida; *S. japonicus*, *l. c.* p. 318, Taf. 18. figs. 33–36, *S. keferstcinii*, *l. c.* p. 318, Taf. 18. figs. 37–40, Acapulco.

Selenka, *l. c.*, describes the following species of *Holothuria* (L.), dividing the genus into two sections—A. The ventral feet are about once again as numerous as the dorsal feet, the latter appearing mostly as warts on the skin; B. The simple or warty feet are equally distributed over the whole body:—

A. *H. paradoxa*, *l. c.* p. 322, Taf. 18. fig. 41, Sandwich Isles; *H. pulla*, *l. c.* p. 326, Taf. 18. fig. 51, Amboina, very near *H. floridana*, Pourt., but differs in possessing the organ of Cuvier and in other details; *H. pervicax*, *l. c.* p. 237, Taf. 18. fig. 54, Zanjibar, Sandwich Isles; *H. grisea*, *l. c.* p. 328, Taf. 18. figs. 55, 56, Hayti; *H. glaberrima*, *l. c.* p. 328, Taf. 18. figs. 57, 58, Hayti, Panama, &c.; *H. lubrica*, *l. c.* p. 329, Taf. 18. figs. 59, 60, Acapulco; *H. pulchella*, *l. c.* p. 329, Taf. 18. figs. 61, 62, Sandwich Isles; *H. unicolor*, *l. c.* p. 329, Taf. 18. figs. 63, 64, Barbadoes; *H. farcimen*, *l. c.* p. 330, Taf. 18. fig. 65, Azores; *H. armata*, *l. c.* p. 330, Taf. 18. fig. 66, Hakodadi (Japan).

B. *H. princeps*, *l. c.* p. 332, Taf. 18. figs. 67–69, Florida; *H. inhabilis*, *l. c.* p. 333, Taf. 19. figs. 73, 74, Sandwich and Friendly Islands; *H. vagabunda*, *l. c.* p. 334, Taf. 19. figs. 75, 76, Java, Zanjibar, Sandwich Islands, &c.; *H. strigosa*, *l. c.* p. 334, Taf. 19. figs. 77–79, Zanjibar; *H. languens*, *l. c.* p. 335, Taf. 19. figs. 80, 81, Panama; *H. pardalis*, *l. c.* p. 336, Taf. 19. fig. 85, Zanjibar, Sandwich Isles; *H. pyxis*, *l. c.* p. 337, Java; *H. subdivisa*, *l. c.* p. 338, Taf. 19. fig. 87, Panama; *H. verrucosa*, *l. c.* p. 338, Taf. 19. fig. 88, Sandwich Isles; *H. humilis*, *l. c.* p. 339, Taf. 19. fig. 89, Sandwich Isles.

The following new species are described by Semper (*l. c.*):—

Holothuria. H. gräffei, *l. c.* p. 78, tab. 30. fig. 9; *H. arenicola*, *l. c.* p. 81, tabs. 20, 30. fig. 13, tab. 35. fig. 4, Bohol; *H. squamifera*, *l. c.* p. 83, tab. 30. fig. 15, Bohol, ten fathoms; *H. albiventer*, *l. c.* p. 83, tab. 30. fig. 14, tab. 25. fig. 5, Bohol, under stones on the strand; *H. gracilis*, *l. c.* p. 84, tab. 23, tab. 30. fig. 17, tab. 35. fig. 6, Bohol; *H. aculeata*, *l. c.* p. 84, tab. 24, tab. 30. fig. 19, Bohol, six to eight fathoms; *H. tenuissima*, *l. c.* p. 85, tab. 30. fig. 20, Bohol, fifteen fathoms; *H. similis*, *l. c.* p. 85, tab. 25, tab. 30. fig. 18, Bohol, ten to twenty fathoms; *H. coluber*, *l. c.* p. 90, tabb. 28,

30. fig. 28, Bohol, six to eight fathoms; *H. immobilis*, *l. c.* p. 90, tabb. 29, 30. fig. 27, tab. 35. fig. 8, Bohol, as last; *H. crinaceus*, *l. c.* p. 91, tab. 30. figs. 23, 24, Bohol, on the strand; also *H. crinaceus*, var. *pygmæa*.

Semper records (*l. c.*) the following species as found in the Philippines:—*Holothuria monacaria*, Lees=*Stichopus gyrifer*, Sel.; *H. marmorata*, Jäg.=*H. brandtii*, Sel.; *H. scabra*, Jäg.=*H. tigris*, Brdt., Selenka; *H. vagabunda* Sel.; *H. botellus*, Sel.; *H. atra*, Jäg (non Sel.); *H. fusco-cinerea*, Jäg. (non Sel.); *H. edulis*, Lees; and *H. pulchella*, Sel.

Semper describes (*l. c.*) the following new species not from the Philippines:—*Holothuria vitiensis*, *l. c.* p. 80, tab. 30. fig. 12, Viti Isles; *H. kællikeri*, *l. c.* p. 86, tab. 30. fig. 25, tab. 35. fig. 7, Samoa Isles; *H. martensii*, *l. c.* p. 86, tab. 30. fig. 16, Amboina; *H. flavo-maculata*, *l. c.* p. 87, tab. 30. fig. 26, Samoa; *H. difficilis*, *l. c.* p. 92, tab. 30. fig. 21, Samoa Isles.

Holothuria atra, Sel., not being *H. atra* of Jäger, Semper substitutes *amboinensis* for the last described species.

Dendrochirotæ.

Lissothuria, gen. nov., Verrill, *l. c.* p. 322. Allied to *Psolus*, but having the upper surface of the body covered with a soft smooth skin, in which are imbedded minute perforated plates. Lower surface flat, with three broad rows of crowded suckers. Anal area elevated, the opening surrounded by calcareous papillæ. Tentacles ten, arborescently branched, the two lower ones smallest.

L. ornata, sp. n., Verrill, *l. c.* p. 322, Panama.

Psolus complanatus, sp. n., Semper, *l. c.* p. 61, tab. 13. fig. 19, Zamboanga; *P. boholensis*, sp. n., Semper, *l. c.* p. 62, tab. 12. fig. 3, tab. 13. figs. 21, 22, tab. 15. figs. 4, 5, Bohol, six to seventeen fathoms. A variety of this latter species is described under the name of *pandanensis*.

Colochirus cylindricus, sp. n., Semper, *l. c.* p. 56, tab. 13. fig. 16, tab. 14. fig. 15, Bohol, ten fathoms; *C. anceps**, Selenka, Hongkong, &c., Semper, *l. c.* p. 57, tab. 12. fig. 1, tab. 13. fig. 15, tab. 14. figs. 2 & 17 (on plate marked fig. 11 by mistake); *C. cucumis*, Semper, *l. c.* p. 58, tab. 13. fig. 17, tab. 14. fig. 16; *C. viridis*, Semper, *l. c.* p. 59, tab. 12. fig. 2, Zamboanga; *C. cæruleus*, Semper, *l. c.* p. 59, tab. 11. fig. 1, tab. 13. fig. 18, tab. 14. figs. 1–14, tab. 15. fig. 1, Bohol, from high-water mark to ten fathoms deep; *C. jagoni*, sp. n., Semper, *l. c.* p. 60, Singapore.

Echinocucumis adversaria, sp. n., Semper, *l. c.* p. 60, tab. 11. fig. 7, tab. 13. fig. 26, Bohol, thirty fathoms.

Thyonidium cebuense, sp. n., Semper, *l. c.* p. 67, tab. 12. fig. 5, tab. 13. fig. 25, tab. 15. fig. 8, Cebú, ten fathoms.

Semper (*l. c.*) describes the following new species of *Cucumaria*:—*C. maculata*, *l. c.* p. 47, tab. 13. fig. 8, tab. 14. fig. 5, Bohol, ten fathoms; *C. canescens*, *l. c.* p. 48, tab. 13. fig. 6, tab. 14. figs. 3, 6, 9, & 10, tab. 15. figs. 2, 3, Bohol, six to twelve fathoms, Pandanon, thirty fathoms; *C. versicolor*, *l. c.* p. 49, tab. 12. fig. 4, tab. 13. fig. 11, tab. 14. fig. 8, Bohol, six to ten fathoms;

* Selenka describes a species with this name, which he refers to a new genus, *Cercodemas anceps*, Selenka, Zeitschr. wiss. Zool. xvii. p. 343, but which afterwards he refers to as a synonym of *Colochirus quadrangularis*, Lesson, Zeitschr. wiss. Zool. xviii. p. 112. Is this not the same species as that above referred to by Semper?

C. citrea, *l. c.* p. 50, tab. 11. fig. 6, tab. 13. fig. 10, tab. 14. fig. 6, Bohol, eight fathoms; *C. longipeda*, *l. c.* p. 51, tab. 11. fig. 4, tab. 13. fig. 9, tab. 14. fig. 7, Pandanon, thirty fathoms; *C. conjungens*, *l. c.* p. 51, tab. 11. fig. 5, tab. 13. fig. 7, tab. 14. fig. 4, Bay of Manila, two to three fathoms. Also the following species not from the Philippines:—*C. leonina*, *l. c.* p. 53, tab. 15. fig. 9, Singapore; *C. africana*, *l. c.* p. 53, tab. 15. fig. 16, Querimba; *C. godeffroyi*, *l. c.* p. 53, tab. 15. figs. 12–14, Iquique, west coast of South America; *C. cylindrica*, *l. c.* p. 53, tab. 15. fig. 10, Isle of France; *C. acicula*, *l. c.* p. 54, tab. 15. fig. 11, Viti Isles.

Cucumaria quinquesemita, sp. n., Selenka, *l. c.* p. 351, Taf. 20. fig. 107 *a* & *b*, Mendocino, Charleston (?).

Pentacta panamensis, sp. n., Verrill, *l. c.* p. 321, Panama. Closely allied to *P. pentactes*, Jäg., of Europe, which Verrill considers the type of this genus, restricting *Cucumaria* to such forms as *P. frondosa*.

Ocnus imbricatus, sp. n., Semper, *l. c.* p. 54, tab. 11. fig. 2, tab. 13. figs. 12, 13, tab. 14. figs. 12, 13, Bohol, ten fathoms; *O. pygmæus*, sp. n., Semper, *l. c.* p. 55, tab. 13. fig. 14, tab. 14. fig. 11, Bohol; and *O. molpadioides*, sp. n., Semper, *l. c.* p. 55, tab. 15. fig. 13, from China.

Urodemas, g. n., Selenka, *l. c.* p. 352. Feet distributed symmetrically over the whole body. Tentacles twenty, of which five are smaller than the rest.—*U. perspicillum*, sp. n., Selenka, *l. c.* p. 352, Taf. 20. figs. 110, 111. Two specimens from Sydney.

Orcula punctata, sp. n., Selenka, *l. c.* p. 352, Taf. 20. fig. 112, Charleston.

Thyone villosa, sp. n., Semper, *l. c.* p. 65, tab. 21. fig. 3, tab. 13. fig. 24, tab. 15. fig. 6, Cebu, ten fathoms.—*T. surinamensis*, sp. n., Semper, *l. c.* p. 65, tab. 15. fig. 15, Surinam.

Stolus, gen. nov., Selenka, *l. c.* p. 355. Feet distributed equally over the whole surface. Tentacles ten; of these two much smaller than the others. Anus unarmed.

S. sacellus, sp. n., Selenka, *l. c.* p. 355, Taf. 20. figs. 115, 116, Zanjibar; *S. gibber*, sp. n., Selenka, *l. c.* p. 356, Panama; *S. ovulum*, sp. n., Selenka, *l. c.* p. 356, Taf. 20. fig. 117.

Stolus (*Thyone*) *rigidus*, sp. n., Semper, *l. c.* p. 66, tab. 13. fig. 23, tab. 15. fig. 7, Bohol, ten fathoms; *Stolus pedatus*, sp. n., Semper, *l. c.* p. 67, Chinese Sea.

Molpadidæ.

Embolus, gen. nov., Selenka, *l. c.* p. 359. Fifteen stump-shaped tentacles. Calcareous ring completely absent. *E. pauper*, sp. nov., Selenka, *l. c.* p. 359, Taf. 20. fig. 132, Cape Palmas?

Haplodactyla molpadioides, sp. n., Semper, *l. c.* p. 41, tab. 9, tab. 10. figs. 1, 2*a*, 4, 5, 9, tab. 13. figs. 1–4, tab. 15. fig. 19, Cebu, Bohol, ten to thirty fathoms in mud. Two varieties of this species are also described by Semper,—one, var. *pellucida* (*l. c.* p. 42), from Bohol, the other, var. *sinensis* (*l. c.* p. 43), from China.

APNEUMONA.

Semper (*l. c.* p. 7) divides the family *Synaptidæ* into three families:—1. *Oncinolabidæ* for *Oncinolabes*, Brandt, placed by Selenka doubtfully near *Psolinus*, Forbes; 2. *Eupyrgidæ* for

Eupyrgus, Lütken; and 3. *Synaptidæ* for all the other genera of lungless Holothuroids.

The following new species are described by Semper (*l. c.*):—*Synapta molesta*, *l. c.* p. 9, tab. 4. fig. 13, tab. 5. fig. 22, tab. 6. fig. 8, tab. 7. fig. 3, Bohol; *S. pseudo-digitata*, *l. c.* p. 9, tab. 4. fig. 12, tab. 7. fig. 3, Bohol, fifteen fathoms, muddy bottom; *S. dubia*, *l. c.* p. 10, tab. 4. fig. 11, tab. 5. fig. 14, tab. 8. fig. 4, Bohol; *S. similis*, *l. c.* p. 10, tab. 3. fig. 2, tab. 4. fig. 14, tab. 6. figs. 1–3, tab. 7. figs. 5, 6, tab. 8. fig. 1, Bohol, in the slime of the mangrove swamps; *S. grisea*, *l. c.* p. 11, tab. 4. figs. 6, 7, Bohol, four to six fathoms; *S. glabra*, *l. c.* p. 12, tab. 2, tab. 4. fig. 8, Bohol; *S. nigra*, *l. c.* p. 12, tab. 4. fig. 9, Bohol, on the reef; *S. reticulata*, *l. c.* p. 13, tab. 4. figs. 4, 5, tab. 5. figs. 12 & 23, tab. 6. fig. 9, Bohol, eight fathoms; *S. indivisa*, *l. c.* p. 13, tab. 4. fig. 1, Zamboanga; *S. recta*, *l. c.* p. 14, tab. 4. figs. 2, 3, tab. 5. fig. 18, tab. 8. fig. 2.

Semper (*l. c.* p. 11) mentions the occurrence of *Synapta beselii*, Jäger, throughout the islands of the Philippine. The species is figured on tab. 1, and the details of its anatomy in plates 6, 7, & 8.

Semper (*l. c.* p. 15) remarks that *Synapta kefersteinii*, Selenka, is the only species of the genus with more than twenty tentacles, and contrasts this interesting intermediate form with several other species of the same genus.

The following new species are described by Selenka (*l. c.*):—*Synapta kefersteinii*, *l. c.* p. 360, Taf. 20. figs. 120, 121, Sandwich Isles; *S. agassizii*, *l. c.* p. 361, Taf. 20. figs. 122*a* & *b*, Friendly Isles; *S. gracilis*, *l. c.* p. 363, Taf. 20. figs. 123, 124, Massachusetts Bay, *S. albicans*, *l. c.* p. 363, Taf. 20. fig. 125, California.

Synapta viridis, Pourtalez (1851), is described as *S. pourtalesii*, Selenka, there being already a *S. viridis* described by Lesueur (1825).

Anapta, gen. nov., Semper, *l. c.* p. 17. Body slender, worm-like. Tentacles proportionally very small, finely plumed. Thickly beset with small knots or papillæ, which in the living state are whitish, and contain no trace of anchors or wheels. The only secretions of the integument are biscuit-shaped plates of the same form as those which occur also in the ordinary Synaptæ, near the anchor and miliary plates.

A. gracilis, sp. n., p. 17, tab. 8. fig. 1, tab. 4. fig. 15, tab. 5. figs. 16, 17 & 26, tab. 7. figs. 7, 8, tab. 8. figs. 8, 13 & 15, in sand, from the Gulf of Manilla.

Leptosynapta. Under this generic name, Verrill (*l. c.* p. 325, footnote) proposes to separate from the typical species of *Synapta* (*S. mammillosa*, Esch.) such species as *S. tenuis*, Ayres, of New England, and *S. inhærens* of Europe. These are distinguished by their more slender form, the absence of prominent verrucæ, fewer (12), shorter, and more digitate tentacles, &c. *L. tenuis* may be regarded as the type. Eschscholtz himself referred such species to his genus *Chirodota*, from the typical species of which they differ in having minute calcareous hooks in the skin for adhesion. The typical species of *Synapta* have fifteen tentacles and prominent verrucæ.

Heterosynapta is proposed as a new genus by Verrill (*l. c.* p. 346, footnote) for *H. viridis*, Lesueur; it has four simple and eight pinnate tentacles; its skin contains small calcareous hooks, as in *Leptosynapta*. It has the habit of clinging to algæ &c., instead of burrowing, like most others of this family.

Chirodota. Semper, *l. c.*, describes the following new species:—*C. rigida*, *l. c.* p. 18, tab. 3, fig. 3, tab. 5. figs. 3 & 13, tab. 6. fig. 4, tab. 8. fig. 11, in holes

in coral rock, about high-water mark, Bohol; *C. panaensis*, *l. c.* p. 19, tab. 5 figs. 1, 15, 21, & 27, between large boulders, about high-water mark, Panaon; *C. vitiensis*, Gräffe, *l. c.* p. 19, tab. 5. figs. 8 & 20, tab. 6. fig. 12, tab. 8. fig. 7, from Viti Isles; *C. variabilis*, *l. c.* p. 20, tab. 5. figs. 6, 7, 9–11, 19, tab. 6. fig. 11, tab. 8. figs. 5 & 6, Bay of Manila; *C. dubia*, *l. c.* p. 21, tab. 5. fig. 4, tab. 8. fig. 16, Camiguin (north of Luzon); *C. incongrua*, n. sp.?, *l. c.* p. 22, tab. 5. figs. 5–25, tab. 8. fig. 12, same locality as last.

Selenka describes the following new species:—*Chirodota tigillum*, *l. c.* p. 366, Eastport (Maine); *C. typica*, *l. c.* p. 366, Taf. 20. figs. 126, 127?, Massachusetts Bay.

Myriotrochus rinkii, Steenstrup. This species was met with in abundance in patches of sand on a stony bottom, in seven fathoms, at the anchorage in Domino Harbour; it was also found commonly in fifteen to thirty fathoms at Square Island. Packard, *l. c.* p. 269.

Semper establishes a new genus, *Echinosoma* (*l. c.* p. 44), for a species of Holothuroid from Copenhagen, which he describes as new under the name of *hispidum*, quoting *Eupyrgus hispidus*, Barrett, in doubt as a synonym. Semper doubts whether Lütken's genus *Eupyrgus* will be found destitute of respiratory organs. If Barrett's species be really the same as the one sent to him as such from Copenhagen, then it has three rows of feet and rudimentary organs of respiration.

Echinosoma, gen. nov., Semper, *l. c.* p. 44. Fifteen simple tentacles, destitute of feet, the integument covered with calcareous scales, each with a central elevation; two rudimentary breathing-organs. No ampullæ of the tentacles. No radial water-vascular system of the integument. *E. hispidum*, sp. n., *l. c.* p. 44, tab. 10. figs. 7, 10, 11, 13, 14, 15.

CŒLENTERATA

BY

E. Perceval Wright, M.A., M.D., F.L.S.

Busk, G. Zoophytology—descriptions of new genera and species. Quart. Journ. Micr. Science, vol. i. 1867, pp. 241–244, plate 36.

Collingwood, C. Remarks upon Oceanic Forms of Hydrozoa observed at sea. Ann. & Mag. Nat. Hist. vol. xx. 1867, pp. 309–314.

Dr. Collingwood's observations were made during a prolonged sea voyage, extending over a year and a half, and embracing the Indian Ocean, north and south of the line, the China seas, and the north and south Atlantic Oceans. This paper treats of the *Physophoridæ* and *Lucernaridæ*. The species mentioned are *Physalia pelagica*, *Stephanomia triangularis* (?), and an *Aurelia* ——?, of which a drawing was made; but the species is not described.

Filippi, — de. On two Hydrozoa of the Mediterranean. Mem. R. Accad. d. Sci. di Torino. ser. 2. tom. xxii. p. ; Ann. & Mag. Nat. Hist. vol. xix. 1867, p. 148.

Genth, Carl. Ueber *Solenogorgia tubulosa* (Eine neue Gattung der Gorgoniden). Zeitschr. f. wissensch. Zoologie, Bd. xvii. pp. 429–442, Taf. 23–25: 4. Juli 1867.

Gray, J. E. Additional Note on *Corallium johnsoni*. Proc. Zool. Soc. 1867, pp. 125–127, with a woodcut.

——. Notes on Zoanthinæ, with the descriptions of some new genera. Ibid. pp. 233–240, with a woodcut.

Semper, C. Ueber einige tropische Larvenformen. Zeitschrift wiss. Zool. Bd. xvii. pp. 407–428, Taf. 22: July 1867.

One of the larval forms described was met with by the author about 42° S. lat., near the Cape, and again in the Straits of Sunda and on the south coast of Java. The body is in the form of a cylindrical sac, open at both ends, and is provided with thick walls. The oral orifice leads to a short infundibuliform pharynx: six mesenteric bands proceed from the base of the pharynx, through the ciliated body-cavity, to the posterior end of the body. The anal and oral orifices are of the same size. The inte-

gument contains two kinds of nematocysts, and is also furnished with a ciliated band of closely set cirrhi, which can bend to either side. Dr. Semper concludes this to be the larva of a (free-swimming ?) *Actinia*. Another smaller form met with, instead of a longitudinal band of cilia, was furnished with a circle of cilia, as in many Annelid larva: the body-cavity was not noted; but the integument contained thread-capsules, and the author considers it was probably the younger stage of the first-described form. Now that thread-capsules are met with among the higher mollusca, among the Planaria, and among the Gephyreans (*Sipunculus*), their presence cannot be considered characteristic of the Cœlenterata; this leads Dr. Semper to a disquisition as to the value of the various classifications now adopted for the old group Radiata of Cuvier.

Wright, T. Strethill. Observations on British Zoophytes. Journ. of Anat. & Physiol. May 1867, pp. 332–335, plate 14.

HYDROZOA.

Tubulariidæ.

Cordylophora lacustris, Allman. Van Beneden mentions the occurrence of this species at Ostend adhering to the shells of *Dreissena polymorpha*. Bull. Acad. Roy. Belgique, 2nd ser. vol. xxiii. 1867, pp. 708–709.

Coryne ferox, sp. n., Strethill Wright, *l. c.* p. 335 (not figured), resembling *C. decipiens* (Dujardin).

Atractylis bitentaculata, sp. n., Strethill Wright, *l. c.* p. 334, fig. 5, in a Pecten-shell dredged from the Frith of Forth, near Inchkeith; *A. quadritentaculata*, sp. n., Strethill Wright, *l. c.* p. 334, fig. 6, from Frith of Forth.

Stomobrachium octocostatum, Forbes. Dr. Strethill Wright (*l. c.* p. 332) calls attention to a retiform system of fine canals permeating the muscular web of the subumbrella of this species, which system was altogether distinct from the eight large lateral canals which carry the ovarian bands. This new canal-system consisted of from three to five fine tubes, which sprung from the upper margin of the peduncle, between each of the lateral canals, and passed outwards and downwards as a rarely anastomosing network to join the circular canal bordering the mouth of the umbrella. The presence of ciliary action throughout this system was indicated by the vibratory and onward movement of the milky fluid contained therein. The function of the system is evidently to supply nutrient material to the powerful muscular tissue of this rapidly swimming medusa. The hydroid phase of *Stomobrachium* has not been as yet observed, but will doubtless be a tubularian polyp allied to *Atractylis* or *Clavula*.

Campanulariidæ.

Acanthobrachia, g. n., Strethill Wright, *l. c.* p. 333, pl. 14. fig. 2. Umbrella hemispherical, laterally compressed. Peduncle four-lipped, short. Lateral canals four. Tentacles eight; six long, springing from the sides of margin of the compressed umbrella; two abortive, placed at each end of the umbrella. Otolithic sacs eight; two accompanying each of the tentacular

bulbs, which do not correspond to the lateral canals. Extremities of tentacles furnished with large prehensile palpocils. *A. inconspicua*, sp. n., Strethill Wright, *l. c.* p. 333, Granton Harbour; doubtless the reproductive phase of a Campanularian hydroid.

Sertulariidæ.

Halecium. Norman describes the following new species (Brit. Assoc. Report, 1866, p. 205):—*H. geniculatum*, sp. n., Norman, deep water in the Minch; *H. sessile*, sp. n., Norman, deep water in the Minch.

Medusidæ.

Eleutheria. Prof. de Filippi (*l. c.*) notices the differences that exist in the mode of reproduction in the species of this genus. In the species which he found in the marine aquaria of the Zoological Society of Turin he found no males. The ova were developed in a sac everywhere bounded by the endodermic layer. The development of the ova was not traced beyond the "planula" stage. Prof. de Filippi thinks that the differences in the structure of the umbrella, in the mode of locomotion, and in the position of the sexual organs between the species of this genus and *Cladonema* are sufficient to elevate *Eleutheria* to the rank of a family.

Local List.—Marcusen gives the following list of species found by him in the Black Sea:—*Medusa aurita*, *Sarsia pulchella* and *S. tubulosa*, *Campanularia volubilis* and *C. geniculata*, *Actinia zonata*, Rathke, and *Pleurobranchia rhododactyla*. Archiv f. Naturg. xxxiii. Jahrg. 1. Bd. p. 358.

Histology.—The *résumé* of Prof. Reichert's paper on the contractile substance and intimate structure of the *Campanulariæ*, *Sertulariæ*, and *Hydridæ* is translated in Ann. & Mag. Nat. Hist. vol. xix. 1867, pp. 54–58 (*vide* Record for 1866, p. 632).

Development.—Dr. Strethill Wright (*l. c.*) p. 333 gives some hints as to the best mode of observing the reproduction of Zoophytes. He incidentally remarks that the development of the planula into the hydroid, with the successive development of the polypary, varies very much with the genera and species from which the planulæ are derived: thus in *Sertularia pumila* and *Campanularia dichotoma* the first young polyp is complete in its polypary in a few hours after the planula is discharged, while in *Æquorea* and *Hydractinia* the same process requires weeks. The *Ephyræ* of the *Steganophthalmata* remain in the polyp-phase, if well fed and kept in a darkened place, for years; but if exposed to sunlight and not fed they may be forced to assume their medusoid state.

Häckel's researches on the *Geryonidæ* (Ann. & Mag. Nat. Hist. vol. xix. 1867, pp. 63–67) have been already alluded to in the 'Record' for 1865, p. 780).

Taxidermy.—Prof. Pagenstecher gives a note "Ueber Aufstellung der Quallen in den Museen," in Zeitsch. f. wissensch. Zoologie, Bd. xvii. pp. 379–380, 21st Mar. 1867. He places the Medusæ in a mixture of two parts of common salt and one part of alum, and leaves them in it for from 24 to 48 hours; then putting them up in weak spirits (the addition of a little corrosive sublimate, as in Goadby's solution, is without any advantage and is rather hurtful) he suspends the specimens for the museum by means of *glass rings*, into which they fit, or upon which they rest. Rings for this pur-

pose have been manufactured for Prof. Pagenstecher by M. Sommer at a very trifling cost.

ACTINOZOA.

Alcyonaria.

Kölliker briefly refers to his discovery of a true polymorphism in various genera of *Anthozoa alcyonaria*. The asexual individuals appear to preside over the introduction of sea-water into the organism, possessing a body-cavity and stomach like the other individuals. They are yet destitute of tentacles. They communicate with the sexual individuals; but the mode in which this communication is effected varies with the genera. There would appear to be two types in the mode of distribution of the asexual individuals upon the polyparies—either distributed among the sexual individuals over the whole of the polypigerous region, as in *Veretillum*, *Sarcophyton*, *Lituaria*, &c., or restricted to certain definite places, as in *Pterocides*, *Pennatula*, *Funiculina*, *Virgularia*, &c. In the *Alcyonidæ* and *Gorgonidæ* dimorphism was not found. The polyps of *Tubipora* have been examined by Kölliker, who considers their structure as *Alcyonarian*, near *Clavularia*. Verhand. d. phys.-med. Gesellschaft in Würzburg Sitzung. 28. Dec. 1867.

Alcyoniidæ.

Cornularia australis, sp. n., Busk, *l. c.* p. 243, pl. 36. figs. 7, 8, Australia.

Lobularia (*Alcyonium*) *digitata*, Delle Chiaje. Claparède describes a very remarkable crustacean parasite in the cavity of the body of this Alcyonarian, which he does not feel quite certain to be the *Alcyonium digitatum*, L. The parasite belongs to the genus *Lamippe*, Bruz., and is called *L. proteus*. It was met with in the Bay of Naples. Claparède, Misc. Zool. No. iv., Annal. des Scienc. Natur. 5th ser. tome viii. 1867, pp. 23–28, pl. 5.

Pennatulidæ.

Pennatula mollis, sp. n., Alder, *l. c.* p. 207, the Hebrides. It is probable that this is *P. rubra*, var. *β*, of Pallas; it is, however, distinct from the *P. rubra*, Pallas, which is the *P. phosphorea* of British authors, and probably also of Linné.

Gorgoniidæ.

Carijoa, g. n., F. Müller, Archiv f. Naturg. 33. Jahrg. 1. Bd. 1867, p. 330, pl. 9. figs. 56, 57. No diagnosis is given of this genus, which is described in a footnote to a paper by Fritz Müller "On *Balanus armatus*, and on a hybrid between this species and *B. improvisus*, var. *assimilis*, Dana." The stem of the polypary is formed by a single polyp. The polyp is retractile. The plumose tentacles are produced into a thin terminal filament, which appears nodose. From the stem spring numerous branches; the great majority of these remain simple, but some become branched. The body-cavities of the individual polyps are *not* connected with each other. In a fresh state the *Carijoa* is nearly colourless; but it rapidly bleaches. The generic name is de-

rived from that of the inhabitants of Santa Catharina at the time of its discovery—the Carijós. *C. rupicola*, sp. n., F. Müll.

Solenogorgia, g. n., Genth, *l. c.* p. 433. Stem smooth, somewhat pliant, solid, perforated by nutritive canals; branches and ramules provided with flat appendages; the edges of these are so grown together that the branches and ramules appear hollow, but the first and later portions are free; polyps arranged in two rows, the under surface and middle line of the branches and ramules remaining free; each polyp is seated in a tolerably well-defined eight-rayed disk or cup; the interior of the whole stem is pervaded by the nutritive canals, with the exception of a small not very well-defined axis appearing in the branches; spicula, with the exception of those of this axis, free. In the substance of the middle portion of the whole stem there is an occasional development of horny material. *S. tubulosa*, sp. n., Genth, from the Philippines.

Dr. J. E. Gray has described an Alcyonarian (from the same habitat as *Solenocaulon tortuosum*) which is very like Genth's species; but there are several points of difference.

The systematic position of this genus is, according to Genth, among the *Gorgoniidæ*, and in the subfamily *Briareaceæ*, M.-E. (*vide* Kölliker's 'Icones Histologicæ,' ii. p. 141, or 'Zool. Record,' 1866, p. 625).

Corallium. Gray, *l. c.*, divides this genus as follows:—

1. *Corallium*. The polypes slightly elevated from the bark, and scattered on all sides of the branches. *C. rubrum*, Lam. Mediterranean.

2. *Pleurocorallium*. The coral branching in a plane; the polypes scarcely raised, confined to one surface, mostly near the apex of the very small branchlets, and often in twos. *P. secundum*, Dana. Sandwich Islands ??

3. *Hemicorallium*. The polypes prominent, ovate cylindrical, often clustered, all distributed on one side of the branches. *H. johnsoni*, Gray (woodcut, *l. c.* p. 126). Madeira.

Zoantharia.

Actiniidæ, subfam. *Zoanthinæ*.

Gray, *l. c.* p. 234, describes the following *new genus*, which he places near *Palythoa*:—

Pales. Body cylindrical, isolated, solitary, clustered, or sometimes proliferous, but each specimen having a separate base; outer skin smooth, thin, olive-brown, slightly concentrically wrinkled; the tentacles numerous; the internal laminæ numerous, slender, only slightly elevated, straight and parallel above, with a thickened edge and sinuous below. *P. cliftoni*, sp. n., Western Australia, fig. 1, p. 236.

Sphenopus marsupialis, Steenstrup, is figured and described by Gray (*l. c.* pp. 235, 236, figs. 2–5). The specimens on which the species was founded came from Tranquebar; those figured by Dr. Gray from Pulo Faya, in the China seas, and from Massachusetts Bay, U.S. America.

Epizoanthus. Gray establishes this genus (*l. c.* p. 237) for *Zoanthus couchii*, var. *diffusa*, Gosse, and *Carolia* (*l. c.* p. 239) for *Z. couchii*, var. *linearis*, Gosse.

Triga, g. n., Gray, *l. c.* p. 239. The coral subcylindrical, clavate, solitary, attached, with a rather expanded base; outer coat coriaceous, sandy, concen-

trically wrinkled.—*T. philippinensis*, sp. n., from the Philippines, found attached to small pebbles.

Ctenophora.

Kowalewsky's paper on the development of the *Ctenophora* (*vide* 'Record,' 1867, pp. 621, 632) is abstracted in Ann. & Mag. Nat. Hist. vol. xx. 1867, pp. 228–229.

PROTOZOA

(Including INFUSORIA)

BY

E. Perceval Wright, M.A., M.D. F.L.S.

A. *Separate Publication.*

Stein, F. Der Organismus der Infusionsthiere nach eigenen Forschungen in systematischer Reihenfolge bearbeitet. Abtheilung ii. mit 16 Kupfertafeln. Leipzig, 1867, small fol. pp. i–viii, 1–355.

The second part of this great work on the Infusoria gives (1) a *résumé* of the result of the latest investigations into the structure, mode of increase, and development of the Infusoria, and (2) the natural history of the Heterotrich Infusoria. It will be in the recollection of the reader that the first part was published in 1859, and treated of the Infusoria in general, and of the Hypotrich Infusoria.

B. *Publications in Journals &c.*

Alcock, J. On *Polymorphina tubulosa* from Dogs' Bay, Roundstone. Quart. Journ. Micr. Sci. vol. xv. pp. 237–240.

Bocage, J. V. B. du. On *Hyalonema lusitanicum*. Ann. & Mag. Nat. Hist. vol. xx. 1867, pp. 123–127.

Bowerbank, J. S. On *Hyalonema mirabile*. Proc. Zool. Soc. 1867, pp. 18–34, pls. 4 and 5. Additional Observations on *Hyalonema mirabile*. Ibid. pp. 350–351.

——. On *Alcyoncellum* (*Euplectella*) *speciosum*, Quoy and Gaimard. Ibid. pp. 351–359.

Brady, H. B. On the Rhizopodal Fauna of the Hebrides. Brit. Assoc. Report, 1866, pp. 69–70 (Transact. of Sections).

Cienkowski, L. Ueber den Bau und die Entwickelung der Labyrinthuleen. Schultze's Archiv f. mikrosk. Anatomie, Bd. iii. Heft. 3, 1867, pp. 274–310, Taf. 15–17.

——. Ueber die *Clathrulina*, eine neue Actinophryen-Gattung. Ibid. pp. 311–316, Taf. 18.

Claparède, Ed. Miscellanées Zoologiques. VI. Sur les *Licnophora*, nouveau genre voisin de la famille des *Urcéolariens*. Ann. Sci. Nat. Zool. viii. 1867, pp. 30–34, pl. 6.

Ehrenberg, C. G. Ein Beitrag und Versuch zur weiteren Kenntniss der Wachsthumsbedingungen der organischen kieselerdigen Gebilde. Monatsber. Ak. Wiss. Berl. 1866, pp. 810–823. II. Ueber *Hyalonema lusitanicum* : pp. 823–837 ; Ann. & Mag. Nat. Hist. vol. xix. 1867, pp. 419–426.

Gray, J. E. Notes on *Hyalonema lusitanicum*, and on the genus in general. Proc. Zool. Soc. 1867, pp. 117–125.

——. On *Placospongia*, a new generic form of Spongiadæ in the British Museum. Ibid. pp. 127–129.

——. Notes on the arrangement of Sponges, with the descriptions of some new genera. Ibid. pp. 492–558, pls. 27, 28.

Greef, R. Ueber *Actinophrys eichhornii* und einen neuen Süsswasserrhizopoden, besonders in Rücksicht auf Theilbarkeit derselben resp. Vermehrung durch künstliche Theilung. Schultze's Archiv f. mikros. Anatomie, Bd. iii. Heft 3, 1867, pp. 396–403.

Hancock, A. Note on the Excavating Sponges, with descriptions of four new species. Ann. & Mag. Nat. Hist. vol. xix. 1867, pp. 229–242, pls. 7, 8; also in Nat. Hist. Trans. Northumb. & Durham, vol. i. pp. 337–353, pls. 16, 17.

Lieberkühn, N. Ueber das contractile Gewebe der Spongien. Reichert u. Du Bois-Reymond's Archiv 1867, pp. 74–86, Taf. 3, 4.

Luders, J. Ueber Abstammung und Entwickelung des *Bacterium termo*, Duj. = *Vibrio lineola*, Ehr. Schultze's Archiv f. mikrosk. Anatomie, Bd. iii. Heft 3, 1867, pp. 317–341, Taf. 19; und Bemerkungen von Prof. Hensen. Ibid. pp. 342–344.

McIntosh, W. C. On the Gregariniform Parasite of *Borlasia*. Quart. Journ. Micr. Sci. vol. xv. pp. 38–41, pl. 2.

Owen, Samuel. On the Surface-fauna of mid-Ocean. Journ. Linn. Soc. vol. ix. Jan. 1867, pp. 147–157, pl. 5.

Major Owen gives an account of the various species of Foraminifera met with in a voyage home from Bengal by the Cape of Good Hope. The nets were out day and night, in calm and storm, and the position of the vessel noted at the time of taking in the nets. The presence of Foraminifera on the surface did not depend entirely on the weather; for in calm nights they were often nearly absent, while in fresh blowing weather they were abundant.

Poulet, M. Note sur la présence d'infusoires dans l'air expiré pendant le cours de la coqueluche. Compt. Rend. lxv. No. 6, 1867, pp. 254–255.

Reichert, C. B. Ueber die contractile Substanz (sarcode, protoplasma) und ihre Bewegungserscheinungen bei Polythalamien und einigen anderen niederen Thieren. Phys. Abh. der k. Akad. der Wissen. 1866, No. 3, pp. 151–293, Taf. 1–7.

Rouget, C. Note sur les phénomènes de contraction musculaire chez les Vorticelles. Compt. Rend. Juin 1867, pp. 1128–1132, and Ann. & Mag. Nat. Hist. vol. xx. 1867, pp. 145–148.

Schmidt, Oscar. Spongiologische Mittheilungen. Schultze's Archiv f. mikrosk. Anatomie, Bd. iii. Heft 3, 1867, pp. 390–392.

——. Eine Reclamation, die "geformte Sarcode" der Infusorien betreffend. Ibid. pp. 393–395.

Schneider, A. Zur Kenntniss des Baues der Radiolarien. Reichert u. Du Bois-Reymond's Archiv, 1867, pp. 509–511.

Schultze, Max. On *Hyalonema*. Ann. & Mag. Nat. Hist. vol. xix. 1867, pp. 153–160. Also Ueber *Hyalonema*: Archiv f. mikrosk. Anatomie, Bd. iii. Hft. 2, 1867, pp. 206–214.

Selenka, Emil. Ueber einige neue Schwämme aus der Südsee. Zeitschr. f. wissensch. Zoologie, Bd. xvii. pp. 565–571, Taf. 35: Aug. 26, 1867.

Describes a new genus, *Lacinia*, and several new species of Sponges.

Semper, C. Einige Worte über *Euplectella aspergillum*, Owen, und seine Bewohner. Archiv f. Naturg. xxxiii. Jahrg. 1. Bd. pp. 84–89.

Tatem, T. G. New species of Microscopic Animals. Quart. Journ. Micr. Sci. vol. xv. pp. 250–253 (orig. com.), pl. 10.

Wright, T. Strethill. Observations on British Protozoa. Journ. of Anat. & Physiol. May 1867, pp. 335–338, pl. 15.

I. INFUSORIA.

The most important work published on this class within the last year is, without doubt, Part 2 of Stein's 'Infusionsthiere' (*l. c.*). In the general portion he treats in some detail of the composition of the body of the Infusoria, of the natural limits of the Infusoria, and their position in the animal kingdom (pp. 1–23); indications of a muscular system in the Infusoria (pp. 23–33); reflections on Ehrenberg's latest defence of his theory of there being many stomachs in the alimentary tract of the Infusoria (pp. 33–40); on the sexual development of Infusoria, and criticism of Balbiani's theory (pp. 40–68); inquiry into the conjugation of Infusoria (pp. 68–73); on the budding form of conjugation (pp. 73–83); sexual development in *Oxytrichidæ*, *Euplotidæ*, and *Paramecidæ* (pp. 83–99); some new inquiries into the sexual development in *Vorticellidæ* and *Trichodinidæ* (pp. 99–102); on the genera *Amphileptus* and *Urnula*, parasites on *Vorticella*-stalks (pp. 102–109); further observations on the budding-process &c. in *Vorticella* (pp. 109–112); the conjugation, sexual propagation, and embryonic development of *Vorticella campanula*, *V. nebulifera*, *V. microstoma* (pp. 112–118); Engelmann's researches on the sexual propagation of Infusoria (pp. 118–125); latest researches into the sexual propagation of *Vorticellidæ*, *Ophrydidæ*, and *Trichodidæ* (pp. 125–131); sexual propagation in *Zoothamnium arbuscula* and *Epistylis plicatilis* (pp. 131–138); probable sexual propagation in *Acinetidæ*, rejection of the '*Acineta*' theory (pp. 138–140).

In the special portion we have a revision of the principles of classification and a criticism of the systems of Claparède and Lachmann. The families and genera are placed under the four orders *Peritricha*, *Hypotricha*, *Heterotricha*, and *Holotricha*.

Order I. Peritricha, Stein.

1 Fam. *Ophryoscolecina*, St. Genera: *Ophryoscolex*, St.; *Entodinium*, St.

2 Fam. *Spirochonina* St. Genus *Spirochona*, St.

3 Fam. *Ophrydina*, E. Genera: *Lagenophrys*, St.; *Cothurnia*, E.; *Vaginicola*, E.; *Ophrydium*, E.

4 Fam. *Vorticellina*, E. Genera: *Operularia*, E.; *Epistylis*, E.; *Zoothamnium*, E.; *Carchesium*, E.; *Vorticella*, E.; *Scyphidia*, Lachm.; *Gerda*, Clap. & Lach.; *Astylozoon*, Engelm.

5 Fam. *Urceolarina*, St. Genera: *Urceolaria*, St.; *Trichodina*, E.; *Trichodinopsis*, Clap. & Lach.

6 Fam. *Gyrocorida*, St. Genus *Gyrocoris*, St.

7 Fam. *Cyclodinea*, St. Genera: *Urocentrum*, E.; *Didinium*, St.; *Mesodinium*, St.

8 Fam. *Tintinnodea*, Clap. & Lach. Genera: *Tintinnus*, E.; *Tintinnopsis*, St.

9 Fam. *Halterina*, Clap. & Lach. Genera: *Halteria*, Duj.; *Strombidium*, Clap. & Lach.

Order II. Hypotricha, St.

1 Fam. *Oxytrichina*, E. Genera: *Psilotricha*, St.; *Oxytricha*, E.; *Stylonychid*, E.; *Onychodromus*, St.; *Pleurotricha*, St.; *Gastrostyla*, Engelm.; *Uroleptus*, E.; *Stichotricha*, Perty; *Kerona*, E.; *Epiclintes*, St.; *Urostyla*, E.

2 Fam. *Euplotina*, E. Genera: *Euplotes*, E.; *Styloplotes*, *Uronychia*, St.

3 Fam. *Aspidiscina*, E. Genus *Aspidisca*, E.

4 Fam. *Ervilliina*, Duj. Genera: *Ervilia*, Duj. (*Idana*, Clap. & Lach.; *Dysteria*, Huxl., Cl. & L.); *Trochilia*, Duj.; *Huxleya*, Cl. & L.

5 Fam. *Chlamydodonta*, St. Genera: *Scaphidiodon*, St.; *Chlamydodon*, E.; *Phascolodon*, St.; *Trichopus*, Clap. & Lach.; *Opisthodon*, St.; *Chilodon*, E.

6 Fam. *Peritromina*, St. Genus *Peritromus*.

Order III. Heterotricha, St.

1 Fam. *Spirostomina*, St. Genera: *Condylostoma*, Duj.; *Blepharisma*, Perty; *Spirostomum*, E.; *Climacostomum*, St.

2 Fam. *Stentorina*, St. Genera: *Stentor*, E.; *Freia*, Clap. & Lach.

3 Fam. *Bursaria*, St. Genera: *Bursaria*, E.; *Balantidium*, Clap. & Lach.; *Nyctotherus*, Leidy; *Metopus*, Clap. & Lach.; *Plagiostoma*, Duj.

Order IV. Holotricha.

1 Fam. *Cinetochilina*, St. Genera: *Lembadion*, Perty; *Pleuronema*, Duj.; *Plagiopyla*, St.; *Cyclidium*, E.; *Trichoda*, E.; *Pleurochilidium*, St.; *Cinetochilum*, Perty; *Glaucoma*, E.; *Ophryoglena*, E.

2 Fam. *Paramæcina*, St. Genera:—a. *Leucophryina*: *Panophrys*, Duj.; *Leucophrys*, E.; *Colpidium*, St.: b. *Paramæcina*, s. str.: *Isotricha*, St.; *Conchophthirus*, St.; *Ptychostomum*, St.; *Colpoda*, E.; *Paramæcium*, E.; *Nassula*, E. (*Acidophorus*, St.; *Cyclogramma*, Perty; *Liosiphon*, E.); *Cyrtostomum*, St.

3 Fam. *Enchelina*, St. Genera: *Prorodon*, E.; *Holophrya*, E.; *Actinobolus*, St.; *Urotricha*, Clap. & Lach.; *Perispira*, St.; *Plagiopogon*, St.; *Coleps*, E.; *Enchelys*, E.; *Enchelyodon*, Cl. & L.; *Lacrymaria*, E.; *Phialina*, E.; *Trachelocerca*, E.; *Trachelophyllum*, Cl. & L.

4 Fam. *Trachelina*, St. Genera: *Dileptus*, Duj.; *Trachelius*, E.; *Loxodes*, E.; *Loxophyllum*, Duj.; *Amphileptus*, E.

5 Fam. *Opalinina*, St. Genera: *Haptophrya* (*Discophrya*), St.; *Anoplophrya*, St.; *Hoplitophrya*, St.; *Opalina*, Purk. & Val.

Heterotricha.

Stein (*l. c.* p. 170) describes the following species:—

Condylostoma (Bory), Dujardin: *C. patens*, p. 173.

Blepharisma, Perty: *B. lateritia*, Stein, p. 178; *B. undulans*, p. 186.

Spirostomum, E.: *S. teres*, p. 190; *S. ambiguum*, E., p. 197.

Climacostomum, St.: *C. virens*, p. 210; *C. patulum*, p. 215.

Stentor (Oken), E.: *S. polymorphus*, p. 228; *S. cæruleus*, E., p. 239; *S. roeselii*, E., p. 247 (= *S. polymorphus* in pt., Clap. & Lach.; *Salpistes müllerí*, St. Wright); *S. igneus*, E., p. 260; *S. niger*, E., p. 265; *S. multiformis*, E., p. 269.

Freia, Clap. & Lach. = *Lagotia*, St. Wright, p. 272: *F. ampulla*, Clap. &

Lach., p. 275 = *Lagotia viridis*, St. Wright; *F. producta*, St. Wright, p. 288 *F. elegans*, Clap. & Lach. p. 289.

Bursaria, Müller: *B. truncatella*, p. 300.

Balantidium, Clap. & Lach.: *B. entozoon*, Clap. & Lach., p. 310; *B. elongatum*, St., p. 319; *B. coli*, St., p. 320; *B. duodeni*, St., p. 325.

Metopus, Clap. & Lach.: *M. sigmoides*, Clap. & Lach., p. 329.

Nyctotherus, Leidy: *N. cordiformis*, St., p. 338; *N. ovalis*, Leidy, p. 344; *N. gyoeryanus*, St., p. 347; *N. velox*, Leidy, p. 349.

Plagiotoma, Duj.: *P. lumbrici*, Duj., p. 352.

Claparède (*l. c.*) acknowledges that Stein is fully justified in separating the Trichodines from the family *Vorticellina*, but is not quite sure that the family *Urceolarina* of Stein is a natural one; for while the affinity is acknowledged between the genera *Trichodina*, Ehrb., and *Urceolaria*, St., that of *Trichodinopsis* is not so apparent; and since the remarkable memoir of H. J. Clark, the affinities between the *Vorticellina* and *Urceolarina* would appear more considerable than that between the Trichodines and *Trichodinopsis*; indeed the resemblance may be said to be *mimetic*. The discovery of two ciliated Infusoria, differing both from *Trichodina* and *Trichodinopsis* is a very interesting fact. One of these species had been discovered and described by Cohn as *Trichodina auerbachii*; it was found on a *Doris*, and has since been found by Claparède on *Thysanozoon tuberculatum* (Delle Chiaje); a second species was found on the branchiæ of *Pygmobranchus protensus*, Phil.: both species are placed in a new genus, *Licnophora*, and the second species is called *L. cohnii*. The peristome of the species of this genus recalls to mind certain species of *Stylonychia*, a genus belonging to the *Oxytrichinidæ*, among the Hypotrich Infusoria, whereas their resemblance, on a first glance, to the Trichodines is very remarkable.

Tatem (*l. c.*) describes as new species the following:—*Stephanops longispinatus*, p. 252, pl. 10. fig. 2, and a marked variety of *Cothurnia maritima*, var. *incisa*, met with at St. Leonard's, pl. 10. fig. 3.

A. P. Ninni describes a new species (?) of *Cothurnia*, under the name of *Coth. pancierii*. Atti d. r. Institut. Veneto, serie 3, tom. xi. 1865–66, p. 1284.

Zenker's 'Beiträge zur Naturgeschichte der Infusorien' (*vide* 'Zoological Record, 1866, p. 639) will be found abstracted in Quart. Journ. of Mic. Sci. 1867, pp. 263–270.

Spontaneous Generation.

M. Donné, in a note entitled "Expérience relative aux générations spontanées des animalcules infusoires," states that he took a newly laid hen's egg, and made a minute opening in it towards the summit, piercing the yelk by means of a stylet previously heated to a red heat, thus allowing a portion of the contents to escape; he filled up the egg with some boiling water (distilled) and hermetically sealed the opening. The egg was left for five days in a room at the temperature of from 17 to 24 degrees; on being then opened and the contents examined with the microscope they were found to swarm with Vibriones. Compt. Rend. lxiv. No. 1, 1867, p. 47; also Compt. Rend. lxv. No. 15, 1867, pp. 602–605.

Bacterium bacillus and *B. termo* were found by Poulet (*l. c.*) in large numbers in the air expired by children suffering from attack of whooping-cough.

Physiology and Anatomy.

Vorticella. Rouget (*l. c.*), from investigating the phenomena of contrac-

tility in the stalk of *Vorticella*, is led to believe that the contraction of the muscular fibre of the stalk corresponds with the state of repose of the spring; it is the immediate consequence of its elasticity. The elongation of the fibre is the result of the forced extension of the spring by a movement dependent on the act of nutrition, and acting during the apparent repose of the contractile organ. As soon as the force of this antagonistic force is exhausted, elasticity, recalling the muscle to its natural form, produces the so-called movement of contraction.

II. SPONGIIDA.

The following is a synopsis of the families proposed by Dr. J. E. Gray (*l. c.* p. 502 *et seq.*) :—

Subclass I. *PORIPHORA SILICEA.*

Section I. Malacosporæ. *Reproduction by ova contained in a thin membranaceous ovisac not strengthened by siliceous spicules, or by gemmules scattered in the body of the sponge.*

Order I. CORALLIOSPONGIA. Sponges hard, coral-like, entirely formed of siliceous spicules anchylosed together by siliceous matter into a network. Mass covered with a thin coat of sarcode when alive.

Family 1. Dactylocalycidæ. Sponge massive, expanded or flabellate, reticulate, angular.

Genera :—*Dactylocalyx*, Stutchbury, 1841: *D. pumicea*, Stutch. (Gray *l. c.* pl. 27. fig. 2). *Miliusia*, Gray, 1859: *M. callocyathes*, Gray, P. Z. S. 1859, p. 439, Radiata, pl. 16. *MacAndrewia*, Gray, 1859: *M. azorica*, Gray, P. Z. S. 1859, p. 438, Radiata, pl. 15. *Farrea*, Bowerb.: *F. orca*, Bowerb.

Fam. 2. Aphrocallistidæ. Sponge tubular; tubes closed with a reticulated lid; parietes formed of agglutinated siliceous spicula, with round horizontal lateral pores; inner surface strengthened with clustered bundles of elongated spicules.

Genus :—*Aphrocallistes*, Gray: *A. beatrix*, P. Z. S. 1858, p. 114, Radiata, pl. 11.

Order II. KERATOSPONGIA. Sponge elastic. Skeleton formed of horny netted fibres, generally without, but sometimes more or less strengthened with, minute siliceous spicules or grains of sand.

Fam. 3. Spongiadæ. Skeleton formed of one kind of horny reticulated fibres, not enclosing any spicules or sand.

Genera :—*Spongia*, Linnæus: *S. officinalis*. *Spongionella*, Bowerb.: *S. pulchella*, Bowerb. Brit. Sp. i. p. 206. *Cacospongia*, Sdt.: *C. mollior*, Schmidt, Spong. Adriat. p. 27. *Siphonia*, Blainv.: *S. typum*, Blainv. Man. Act. p. 536. *Aplysina*, Sdt.: *A. aerophoba* (Nardo), Schmidt, Spong. Adriat. p. 25. *Verongia*, Bowerb.: *V. fistularis* (Lamk.), Bowerb. Brit. Sp. i. p. 209. *Auliskia*, Bowerb.: *A. bowerbankii* (Gray), *l. c.* p. 510.

Fam. 4. Hircinidæ. Skeleton formed of two kinds of horny fibres,—the one thick, and with a central line of spicules or grains of sand within, reticulated, forming the base of the skeleton; the other very slender, forming radiating spicular tufts, which do not anastomose.

Genera :—*Hircinia*, Sdt.: *H. flavescens*, Schmidt, Spong. Adriat. p. 33.

Sarcotragus, Sdt.: *S. spinulosus*, Schmidt, Spong. Adriat. p. 35. *Stematumenia*, Bowerb.: *S. bahamensis* (Gray), *l. c.* p. 511.

Fam. 5. DYSIDEIDÆ. Sponge massive, formed of reticulated horny fibres, with sand (or the spicula of other sponges) imbedded in the centre, and covered with a more or less thick coat of horny matter.

Genus:—*Dysidea*, Johnst.: *D. fragilis*, Johnston (Gray, *l. c.* p. 511).

Fam. 6. CHALINIDÆ. Skeleton formed of regular, reticulated, anastomosing, horny fibres, which have one or more series of regular small siliceous spicules in the central lines.

Genera:—*Chalina*, Bowerb.: *C. oculata* (Johnst.) (Gray, *l. c.* p. 512). *Orthodictya*, g. n., Gray: *O. cinerea* (Johnst.) (Gray, *l. c.* p. 512 & p. xiv). *Halispongia*, Bowerb.: *H. cavernosa* (Gray), (Gray, *l. c.* p. 512). *Acanthella*, Sdt.: *A. acuta*, Schmidt, Spong. Adriat. p. 65. *Tragosia*, g. n., Gray: *T. infundibuliformis* (Linn.), Gray, *l. c.* p. 513. *Clathria*, Sdt.: *C. compressa*, Schmidt, Spong. Adriat. p. 58. *Axinella*, Sdt.: *A. cinnamomea* (Nardo), Schmidt, Spong. Adriat. p. 61. *Astrospongia*, g. n., Gray: *A. polypoides* (Schmidt), Spong. Adriat. p. 62. *Astrostoma*, g. n., Gray: *A. bowerbankii*, Gray, *l. c.* p. 514.

Fam. 7. OPHISTOSPONGIADÆ. Skeleton horny, reticulated; fibres cylindrical, or more or less flattened and expanded, scattered with external diverging spicules.

Genera:—*Ophistospongia*, Bowerb.: *O. australis*, Gray, *l. c.* p. 515. *Seriatula*, g. n., Gray: *S. seriata* (Grant), Gray, *l. c.* p. 515. *Ectyon*, g. n., Gray: *E. sparsus*, Gray, *l. c.* p. 515. *Acarnia*, g. n., Gray: *A. cliftoni* (Bowerb.), Gray, *l. c.* p. 515. *Neenia*, g. n., Gray: *N. verticillata* (Bowerb.), Gray, *l. c.* p. 516. *Raphyrus*, Bowerb.: *R. griffithsii*, Bowerb.

Fam. 8. PHAKELLIADÆ. Sponge expanded, cup-shaped or flabellate; spicula in bundles, cylindrical, numerous, with a closely netted horny skeleton, forming branched and rebranched lines, which do not inosculate.

Genus:—*Phakellia*, Bowerb.: *P. ventilabrum* (Linn.), Gray, *l. c.* p. 516.

Order III. LEIOSPONGIA. Sponges with all the spicules of the same kind, often varying more or less in size and form, but always modifications of the most simple kind of spicules; defensive and retentive spicules nearly always absent.

Fam. 9. HALICHONDRIADÆ. Sponge massive, skeleton composed of cylindrical, fusiform, or pin-shaped spicules, often varying in form in the same sponge, variously fasciculated together, or rarely single, and united by a small quantity of horny matter. Sarcode fleshy or granular.

Genera:—*Reniera*, Sdt.: *R. thomasii* (Bowerb.), Gray, *l. c.* p. 518. *Halichondria*, Flem.: *H. panicea* (Johnst.), Gray, *l. c.* p. 519. *Dictyocylindrus*, Bowerb.: *D. hispidus* (Mont.), Gray, *l. c.* p. 519. *Aaptos*, Gray: *A. adriatica*, Gray = *Ancorina aaptos*, Sdt., Gray, *l. c.* p. 519. *Halisarca*, Bowerb., Gray (not Duj. nor Sdt.): *H. dujardinii*, Johnst.?, Gray, *l. c.* p. 520. *Lieberkuhnia*, Bal.-Criv.: *L. agagrophila*, Bal.-Criv., Gray, *l. c.* p. 520. *Tedania*, Gray: *T. digitata* (Sdt.), Gray, *l. c.* p. 520. *Oroidea*, Gray: *O. oroides* (Sdt.), Gray, *l. c.* p. 520. *Prianos*, Gray: *P. amorphus* (Sdt.), Gray, *l. c.* p. 520. *Schmidtia*, Bal.-Criv.: *S. ficiformis*, Bal.-Criv., Gray, *l. c.* p. 521. *Crella*, Gray: *C. elegans* (Sdt.), Gray, *l. c.* p. 521. *Sophax*, Gray: *S. fallax* (Bowerb.), Gray, *l. c.* p. 521. *Epicles*, Gray: *E. radiatus* (Bowerb.), Gray, *l. c.*

p. 521. *Eurypon*, Gray: *E. clavatum* (Bowerb.), Gray, *l. c.* p. 521. *Bubaris*, Gray: *B. vermicularis* (Bowerb.), Gray, *l. c.* p. 521. *Ciocalypta*, Bowerb.: *C. penicillus*, Bowerb., Gray, *l. c.* p. 522. *Rasalia*, Gray: *R. viminalis*, Sdt., Gray, *l. c.* p. 522. *Adocia*, Gray: *A. simulans* (Bowerb.), Gray, *l. c.* p. 522. *Philotia*, Gray: *P. varians* (Bowerb.), Gray, *l. c.* p. 522. *Palisia*, Gray: *P. freyerii* (Sdt.), Gray, *l. c.* p. 523. *Suberites*, Nardo: *S. suberia* (Mont.), Gray, *l. c.* p. 523. *Ficulina*, Gray: *F. ficus* (Johnst.), Gray, *l. c.* p. 523. *Raspalia*, Nardo: *R. typica*, Nardo, Gray, *l. c.* p. 523. *Raphiophora*, Gray: *R. patera* (Hardwicke), Gray, *l. c.* p. 524. *Spinularia*, Gray: *S. tethyoides*, Gray = *Tethea spinularia*, Bowerb., Gray, *l. c.* p. 524. *Antho*, Gray: *A. involvens* (Sdt.), Gray, *l. c.* p. 524. *Pilatia*, Gray: *P. frondiculata* (Sdt.), Gray, *l. c.* p. 524.

Fam. 10. CLIONIADÆ. Excavating in shells and limestone. Oscules and pores contractile. The pores when expanded prominent, above the surface of the shell, top flat, with a radiated opening. Oscules conical, tubular, with an open mouth.

Genera:—*Cliona*, Grant: *C. celata*, Grant, Gray, *l. c.* p. 525. *Pione*, Gray: *P. northumbrica* (Hancock), Gray, *l. c.* p. 525. *Myle*, Gray: *M. carpenteri* (Hancock), Gray, *l. c.* p. 525. *Sapline*, Gray: *S. grantii* (Sdt.), Gray, *l. c.* p. 526. *Idomon*, Gray: *I. alderi* (Hancock), Gray, *l. c.* p. 526. *Jaspis*, Gray: *J. johnstonii* (Sdt.), Gray, *l. c.* p. 526. *Pronax*, Gray: *P. lobata* (Hancock), Gray, *l. c.* p. 526. *Samus*, Gray: *S. anonyma* (Bowerb.), Gray, *l. c.* p. 526. *Euryphylle*, Duchass.: *E. latens*, Duchass., Gray, *l. c.* p. 526.

Fam. 11. POLYMASTIADÆ. Sponge massive, with numerous open-mouthed erect tubes. Skeleton of the base, of divergent fascicules of spicules; skeleton of the tubes formed of longitudinal and transverse fascicules of slender cylindrical elongated spicules.

Genera:—*Pencillaria*, Gray: *P. mammillaris* (Bowerb.), Gray, *l. c.* p. 527. *Polymastia*, Bowerb.: *P. robusta*, Bowerb., Gray, *l. c.* p. 527.

Order IV. ACANTHOSPONGIA. Sponge strengthened with various-shaped spicules, besides the usual simple fusiform or needle-like spicules of the preceding order. Spicules bihamate, anchorate, three-pronged, or star-like.

Fam. 12. EUPLECTELLADÆ. Sponge tubular, isolated, with the tubes closed at the top with a netted lid. Skeleton of the tubes formed of bundles of elongated cylindrical thread-like spicules placed in a longitudinal, transverse, and oblique direction, crossing each other, and forming a more or less regular network. Sarcode scattered with stellate spicules, with the rays more or less divided.

Genera:—*Euplectella*, Owen: *E. aspergillum*, Owen, Gray, *l. c.* p. 529. *Corbitella*, Gray: *C. speciosa* (Quoy & Gaimard), Gray, *l. c.* p. 530. *Heterotella*, Gray: *H. corbicula* (Valenc.), Gray, *l. c.* p. 531.

Fam. 13. ESPERIADÆ. Skeleton formed of fusiform and linear spicules, interspersed with anchorate, bihamate, or birotulate spicules, which are either attached to the membranes or scattered in the sarcode, and form a defence to the sponge.

Genera:—*Esperia*, Nardo (part.): *E. typica*, Nardo, Gray, *l. c.* p. 532. *Mycale*, Gray: *M. lingula* (Bowerb.), Gray, *l. c.* p. 532. *Ægogropila*, Gray: *Æ. varians*, Gray = *Desmacidon ægogropila* (Bk.), Gray, *l. c.* p. 532. *Menyllus*, Gray: *M. ingalli* (Bowerb.), Gray, *l. c.* p. 533. *Grapelia*, Gray: *G. aus-*

tralis (Bk.), Gray, *l. c.* p. 533. *Alebion*, Gray: *A. hyndmani* (Bk.), Gray, *l. c.* p. 533. *Iophon*, Gray: *I. scandens* (Bk.), Gray, *l. c.* p. 533. *Isodictya*, Bowerb: *I. normani* (Bk.), Gray, *l. c.* p. 534. *Emplocus*, Gray: *E. tridens* (Sdt.), Gray, *l. c.* p. 534. *Anchinoë*, Gray: *A. perarmatus* (Bk.), Gray, *l. c.* p. 534. *Microciona*, Bowerb. (part.): *M. spinulenta* (Bk.), Gray, *l. c.* p. 534. *Dendoryx*, Gray: *D. incrustans* (Bk.), Gray, *l. c.* p. 535. *Pronax*, Gray: *P. plumosa* (Mont.), Gray, *l. c.* p. 535. *Euthymus*, Gray: *E. shadboltii*, Gray, *l. c.* p. 535. *Desmacidon*, Bowerb. (part.): *D. fruticosus* (Bk.), Gray, *l. c.* p. 535. *Hamigera*, Gray: *H. rubens* (Sdt.), Gray, *l. c.* p. 536. *Hymedesmia*, Bowerb. (part.): *H. zetlandica* (Bk.), Gray, *l. c.* p. 536. *Tereus*, Gray: *T. fimbriatus* (Bk.), Gray, *l. c.* p. 536. *Carmia*, Gray: *C. macilenta* (Bk.), Gray, *l. c.* p. 536. *Corybas*, Gray: *C. lobata* (Bk.), Gray, *l. c.* p. 536. *Ingallia*, Gray: *I. cupulifera*, Gray, *l. c.* p. 537. *Naviculina*, Gray: *N. cliftoni*, Gray, *l. c.* p. 538. *Hamacantha*, Gray: *H. johnsoni* (Bk.), Gray, *l. c.* p. 538. *Gellius*, Gray: *G. jugosus* (Bk.), Gray, *l. c.* p. 538. *Biemna*, Gray: *B. peachii* (Bk.), Gray, *l. c.* p. 538. *Asychis*, Gray: *A. fibulata* (Sdt.), Gray, *l. c.* p. 538. *Dymnus*, Gray: *D. siculus*, Gray, *l. c.* p. 538. *Damo*, Gray; *D. biclavata*, Gray, *l. c.* p. 538. *Abila*, Gray: *A. levis* (Bk.), Gray, *l. c.* p. 539. *Orina*, Gray: *O. angulata* (Bk.), Gray, *l. c.* p. 540. *Carteria*, Gray: *C. japonica*, Gray = *Hyalonema mirabilis* (Bk.), Gray, *l. c.* p. 540.

Family 14. TETHYADÆ. Sponge massive, suborbicular or subramose, fleshy. Skeleton consisting of simple fusiform spicules and of fusiform spicules with three prongs or three diverging hooks at the distal or outer extremity, and with more or less globular many-rayed stellate spicules, or of either of the two kinds.

Genera:—*Donatia*, Nardo (part.): *D. aurantium* (Nardo), Gray, *l. c.* p. 541. *Collingsia*, Gray: *C. sarniensis*, Gray = *T. collingsii* (Bk.), Gray, *l. c.* p. 541. *Thenea*, Gray: *T. muricata* (Bk.), Gray, *l. c.* p. 541. *Amniscos*, Gray: *A. morum* (Sdt.), Gray, *l. c.* p. 542. *Stelletta*, Sdt.: *S. grubii* (Sdt.), Gray, *l. c.* p. 542. *Penares*, Gray: *P. helleri* (Sdt.), Gray, *l. c.* p. 542. *Eciomemia*, Bowerb.: *E. acervus* (Bowerb.), Gray, *l. c.* p. 542. *Dercitus*, Gray: *D. bucklandi* (Bk.), Gray, *l. c.* p. 542. *Ancorina*, Sdt.: *A. crebra* (Sdt.), Gray, *l. c.* p. 543. *Tethya*, Lamk.: *T. cranium* (Lamk.), Gray, *l. c.* p. 543. *Mesapos*, Gray: *M. stellifera* (Bk.), Gray, *l. c.* p. 543. *Laothoë*, Gray: *L. verticillata* (Bk.), Gray, *l. c.* p. 543. *Timea*, Gray: *T. stellata* (Bk.), Gray, *l. c.* p. 544. *Acarnus*, Gray: *A. innominatus*, Gray, *l. c.* p. 544. *Fonteia*, Gray: *F. anomala*, Gray, *l. c.* p. 544. *Pumex*, Gray: *P. adriaticus*, Gray = *Stelletta pumex* (Sdt.), Gray, *l. c.* p. 544. *Corticium*, Sdt.: *C. candelabrum* (Sdt.), Gray, *l. c.* p. 544. *Stelligera*, Gray: *S. furcata*, Gray = *Raspailia stelligera* (Sdt.), Gray, *l. c.* p. 545. *Vibulinus*, Gray: *V. stuposus* (Mont.), Gray, *l. c.* p. 545. *Adreus*, Gray: *A. fascicularis* (Bk.), Gray, *l. c.* p. 545. *Axos*, Gray: *A. cliftonii*, Gray, *l. c.* p. 546. *Achinoë*, Gray: *A. australis* (Bk.), Gray, *l. c.* p. 546. *Cyamon*, Gray: *C. rickersii* (Bk.), Gray, *l. c.* p. 546. ? *Euryades*, Duchass. & Michel.: *E. notabilis* (D. & M.), Gray, *l. c.* p. 546.

Order V. ARENOSPONGIA. Sponge consisting of a disk of agglutinated sand, with a series of diverging spicules on the circumference of the disk, and a pencil of similar spicules at the mouth of the oscules on the upper surface of the disk.

Family 15. XENOSPONGIADÆ.

Genus:—*Xenospongia*, Gray: *X. patelliformis*, Gray, *l. c.* p. 547.

Section II. CHLAMYDOSPORÆ. *Reproduction chiefly by ova contained in defined ova-cells or "ovaria," strengthened with siliceous spicules, sometimes at length becoming solid spheres formed of siliceous spicules radiating from a central point.*

Order VI. SPHÆROSPONGIA. Characters those of the subsection.

Family 16. GEODIADÆ. Sponge massive, fleshy; pores with a constrictive valve. Ovisacs subglobose or oblong, with a thick coat formed of spicules in lines radiating from the axis to the circumference, and at length becoming solid, congregated on the outer surface, or scattered in the flesh. Spicules elongate; the larger ones with two or three expanded or recurved branches on the outer ends; smaller ones simple, often extending beyond the surface.

Genera:—*Pachymatisma*, Bowerb.: *P. johnstonia* (Bk.), Gray, *l. c.* p. 547. *Geodia*, Lamk.: *G. gibberosa* (Lamk.), Gray, *l. c.* p. 548. *Cydonium*, Flem.: *C. barretti* (Bk.), Gray, *l. c.* p. 548. *Erylus*, Gray: *E. mammilaris* (Sdt.), Gray, *l. c.* p. 549. *Triate*, Gray; *T. discophora* (Sdt.), Gray, *l. c.* p. 549. *Caminus*, Sdt.; *C. vulcani* (Sdt.), Gray, *l. c.* p. 549.

Family 17. PLACOSPONGIADÆ. Sponge branched, coral-like, with a central axis and a hard outer coat entirely formed of solidified ova. The axis and outer lamina separated from each other by a layer of sarcode strengthened with bundles of spicules.

Genus:—*Placospongia*, Gray: *P. melobesioides*, Gray, *l. c.* p. 549.

Order VII. POTAMOSPONGIA. Ovisacs coriaceous, scattered in the tissue of the sponge, especially near the base. The cells coriaceous, with a permanent central cavity, strengthened externally with superficial spicules.

Family 18. SPONGILLADÆ. Sponge massive or branched. Skeleton formed of a network of spicula, more or less united together by horny matter; network symmetrical, four-sided.

Genera:—*Ephydatia*, Gray: *E. fluviatilis* (Bk.), Gray, *l. c.* p. 550. *Dosilia*, Gray: *D. plumosa* (Carter), Gray, *l. c.* p. 551. *Metania*, Gray: *M. gregaria* (Bk.), Gray, *l. c.* p. 551. *Acalle*, Gray: *A. recurvata* (Bk.), Gray, *l. c.* p. 552. *Drulia*, Gray: *D. brownii* (Bk.), Gray, *l. c.* p. 532. *Eunapius*, Gray: *E. carteri* (Bk.), Gray, *l. c.* p. 552. *Spongilla*, Gray: *S. lacustris* (Flem.), Gray, *l. c.* p. 552. *Diplodemia*, Bowerb.: *D. vesicula* (Bk.), Gray, *l. c.* p. 553.

Subclass II. *PORIFERA CALCAREA.*

Skeleton composed of calcareous spicules, which are generally three-rayed, stellate.

Family 19. GRANTIADÆ. Sponge tubular or massive, pierced with a tubular cloaca. Outer surface hispid, covered with three-rayed spicules.

Genera:—*Grantia*, Flem.: *G. ciliata*, Flem., Gray, *l. c.* p. 554. *Ute*, Sdt.: *U. capillosa*, Sdt., Gray, *l. c.* p. 554. *Artynes*, Gray: *A. compressa* (Johnston), Gray, *l. c.* p. 555. *Leucosolenia*, Bk.: *L. botryoides*, Bk., Gray, *l. c.* p. 555. *Leuconia*, Grant: *L. nivea* (Flem.), Gray, *l. c.* p. 556. *Leucogypsia*, Bk.: *L. gossei*, Bk., Gray, *l. c.* p. 557. *Clathrina*, Gray: *C. sulphurea*, Gray = *Grantia clathrus* (Sdt.), Gray, *l. c.* p. 557. *Lelapia*, Gray: *L. australis*, Gray, *l. c.* p. 557.

Family 20. ALCYONCELLIDÆ. Sponge tubular, simple or branched. Outer surface tessellated, formed of square perforated cells. Oscules terminal.

Genera:—*Alcyoncellum*, Blainville: *A. gelatinosum*, Blainv., Gray, *l. c.* p. 557. *Dunstervillia*, Bowerbank: *D. tessellata*, Bk., Gray, *l. c.* p. 557.

Family 21. APHROCERASIDÆ. Sponge tubular, branched, formed of two coats: outer coat of simple fusiform spicula, placed side by side in the longitudinal axis of the stem and branches. Inner coat and network of interlaced fibres, placed in all directions. Branches simple, attenuated, and open at the tip.

Genus:—*Aphroceras*, Gray: *A. alcicornis*, Gray, *l. c.* p. 558.

New genera and species:—

Placospongia, gen. nov., Gray, *l. c.* p. 128. Sponge hard, angular, stony, angularly branched. The axis solid, formed of closely packed siliceous globules, with an areolated tubercular surface, and covered with variously shaped hard plates of similar tubercular siliceous globules, having an areolated appearance under the microscope. The outer plates differ greatly in size and form; but they meet at the edges, and rarely one edge slightly overlaps the other, giving the sponge an angular appearance. The axis is separated from the superficial plates by a continous layer of sarcode, furnished with bundles of nearly parallel pin-shaped spicules, which form columns diverging at right angles from the outer surface of the axis to the inner surface of the outer plates. *P. melobesioides*, sp. n., Gray, *l. c.* p. 128. figs. 1–4, Borneo.

Lacinia, gen. nov., Selenka, *l. c.* p. 568. The parenchyma of this sponge produces bodies which contain carbonate of lime.—*L. stellifica*, sp. n., Selenka, *l. c.* p. 568, Taf. 35. figs. 8–10, from Bass's Strait.

Spongelia horrens, sp. n., Selenka, *l. c.* p. 566, Taf. 35. figs. 1–4, Bass's Strait.—*S. cactos*, sp. n., Selenka, *l. c.* p. 966, Taf. 35. fig. 5, Bass's Strait.

Ditelia repens, sp. n., Selenka, *l. c.* p. 567, Taf. 35, fig. 6, Melbourne.

Cacospongia poculum, sp. n., Selenka, *l. c.* p. 567, Taf. 35. fig. 7, Melbourne. The author remarks that this species is very like that figured by Foubressin and Michelotti (work on the Sponges of the Caribbean Seas) as *Spongia haagensenii*, from St. Thomas, and adds, "Die kurze dort gegebene Diagnose ist unbrauchbar." But might not the same be said of the diagnoses of all the species in this prettily illustrated work?

Stelletta nux, sp. n., Selenka, *l. c.* p. 569, Taf. 35. figs. 11–13, Samoa Islands.—*S. bacca*, sp. n., Selenka, *l. c.* p. 569, Taf. 35. figs. 14, 15, Samoa Islands. Is this a *Stelletta*? the author remarks on its affinity to *Tethya cranium*, Bowerb.

Suberites panis, sp. n., Selenka, *l. c.* p. 570, Taf. 35. fig. 16, Melbourne.

Hancock (*l. c.*) describes the following:—*Cliona vermifera*, p. 239, pl. 8. fig. 2, in a species of *Chama*; *C. mazatlanensis*, p. 240, pl. 8. fig. 1, on a *Purpura* from Mazatlan; *C. globulifera*, p. 240, pl. 8. fig. 3, in *Spondylus gaederopus*, from the Mediterranean; *C. carpenteri*, p. 241, pl. 8. fig. 4, in a *Serpula* adhering to a *Chama*, from Mazatlan.

Cliona. Emended descriptions of the following British species of this genus are given by Hancock (*l. c.*):—*C. celata*, p. 237, pl. 7. fig. 7; *C. gorgonioides*, p. 237, probably a mere variety of *C. celata*; *C. northumbrica*, p. 237, pl. 7. fig. 1; *C. vastifica*, p. 237, pl. 7. fig. 2; *C. corallinoides*, p. 238, pl. 7. fig. 3; *C. gracilis*, p. 238, pl. 7. fig. 4; *C. howsei*, p. 238, pl. 7. fig. 5; *C. alderi*, p. 239; *C. lobata*, p. 239, pl. 7. fig. 6.

A. Hancock (*l. c.*) does not at all agree with Dr. Bowerbank's statement (in vol. ii. of the 'Monograph of British Spongiadæ,' p. 216) "that Mr. Hancock has divided Dr. Johnston's *Halichondria celata* into twelve species;" and states, with regard to these species (described in Ann. & Mag. Nat. Hist. vol. iii. 1849, p. 321), that their habits and the characters of their spicula are so well pronounced that, with the exception of one, which he admits to be a critical species, few naturalists, after a careful examination would doubt their distinctness. Mr. Hancock gives many weighty reasons for believing that *Cliona* is the fabricator of its excavated home, and sufficiently demonstrates the following facts:—1. That the sponge, when examined in a good state, is always found to fill every part of the excavation, even to the remotest ramification. 2. That the excavations are as frequently in limestone as in shell. 3. That no worm has been found that can be pronounced to have made these excavations, and that worms are rarely or never taken in them. 4. That these excavations have no resemblance whatever to the burrows of worms. 5. That the surface of the excavations inhabited by *Clionæ* is always shagreened or punctured in a peculiar manner, while that of the burrows of worms is always smooth. 6. That *Clionæ* with the papillæ of the same size, number, and arrangement, and with the same kind of spicula, always occupy similar burrows. 7. That the oscula or papillæ always correspond in size, number, and position to the external orifices in the surface of the shell or stone enclosing the sponge. 8. That *Cliona* has been traced through every stage of growth, from the microscopic gemmule, adding branch after branch, and lobe after lobe, to the fully-developed sponge excavating step by step its complicated abode in sound transparent shell.

Mr. Hancock refers to a certain relation that appears to exist between *Cliona* and the *Foraminifera*; and it would seem "as if there were something real in the relationship pointed out; for recollecting that the *Clionæ* are among the lower organized sponges, their intimate connexion with the *Foraminifera* is what might be looked for."

Fritz Müller, in a paper on *Balanus armatus*, Archiv f. Naturg. xxxiii. Jahrg. 1. Bd. 1867, p. 330, remarks that this Cirripede lives almost exclusively in sponges, one of which would appear to belong to the genus *Papillina*, Schmidt. This species (and perhaps, indeed, says Dr. Müller, the entire genus *Papillina*) is but a *Vioa* (*Cliona*), which takes up its abode first in the shell or other calcareous body, then, destroying them, grows completely over them, forming large cake-like masses, often of a foot or more in diameter. This is a very remarkable conclusion. We trust Dr. Fritz Müller will give some further information on the subject.

Hyalonema. Dr. J. E. Gray (*l. c.*) believes that his opinion in reference to this genus expressed in 1835 is the correct one, viz. that the long siliceous spicules forming the "Glass Rope" constitute the axis, and are the product of a polyp. Dr. Bowerbank (*l. c.*) believes that the basal portion of the sponge (*Carteria*, Gray), the glass rope, and the parasitic polyps are all portions of the one siliceous sponge. Prof. Max Schultze (*l. c.* p. 153) considers it indubitably established that the long threads of the "Glass Rope" are sponge-spicules which terminate in extremely fine ends in the axis of the sponge, and are

united in a very characteristic manner with the tissue of the latter. No one can doubt but they form an organic whole; and a careful examination of the cortical layer, presumed by Dr. Bowerbank to be a cloacal system, proves incontrovertibly that it consists of parasitic polyps, and is no part of the sponge.

Prof. Max Schultze establishes (*l. c.* p. 158) a family, *Lophospongiæ*, to contain the two genera, 1. *Hyalonema* (Gray), from Japan, and, 2. *Euplectella* (Owen), from the Philippines. Prof. Ehrenberg (*l. c.*) considers that the Portuguese *Hyalonema* is not a polyp, but a sponge; but we cannot with certainty gather from his paper whether he with Dr. Bowerbank believes the polyp-structures to be but efferent openings of the sponge, or whether he regards them as parasitic on the sponge. He says, "the comparison of the natural orifices in the corium with polyps would appear not to be very well founded. The observer has seen either parasitic polyps or the ordinary efferent openings in sponges."

In two letters to Dr. J. E. Gray, Prof. Bocage (*l. c.*) expresses surprise at the arguments of Prof. Ehrenberg, and gives an account of an excursion to Setubal, undertaken for the purpose of obtaining all particulars about the Portuguese *Hyalonema* on the spot. Twelve specimens in all have been taken by fishers for sharks in the deep-sea valley off Setubal, but none of these have been examined in a living state. Prof. Bocage inclines with Dr. J. E. Gray to believe that the long siliceous spicules are but the axis of a coral.

Dr. Bowerbank (*l. c.*) suggests that *H. lusitanicum* will eventually prove to be the same species as *H. mirabile*, and thinks that Prof. Bocage's descriptions of the Portuguese specimens are strongly in favour of their spongeous nature. Believing *Hyalonema* to be a sponge, without any parasitic polyps, he describes in great detail *H. mirabile*, giving full particulars of what the author calls "the great cloacal organ and its oscula," and describing a series of contractile membranes for the opening and closing of the inner and outer diaphragms of the oscula. He finds a parallel to the cloacal system in *Hyalonema* in that met with in the British genus *Cicocalypta*.

Euplectella. Semper (*l. c.*) tells of a dredging-voyage which he made to Bohol in 1864, to look for specimens of this sponge. The fishermen asserted they had found it in the channel between Bohol and Cebri; but he looked and dredged for them in vain. In this paper Semper describes, under the name of *Ægya spongiophila*, sp. n., the little crustacean met with so frequently in the middle of the *Euplectella*.

Dr. Bowerbank (*l. c.*) gives a very detailed description of the skeleton of *Euplectella speciosa*. He regards the species figured by Quoy and Gaimard, and described by Owen, as referable to De Blainville's genus *Alcyoncellum*.

Dr. J. E. Gray (Ann. & Mag. Nat. Hist. vol. xix. 1867, p. 44) describes some very young specimens of *Euplectella speciosa*, and, in some further ob-

servations (ibid. p. 138) on the same species, he suggests that probably *E. cucumer* of Owen is but a shorter, broader, and more erect specimen of *E. speciosa*, the curved form of which latter species may have been produced by the crab that inhabits it.

For a description and anatomical account of the contractile tissue in sponges see Lieberkühn's paper (*l. c.*); appended to this paper there are also some observations on the development of a *Spongilla*.

H. J. Clark's paper on the animality of the Ciliate Sponges and on their affinities with the flagellate Infusoria is reprinted in the Ann. & Mag. Nat. Hist. vol. xix. 1867, pp. 13–18 (*vide* 'Record' for 1866, p. 644).

III. RHIZOPODA.

New genera and species :—

Dr. Strethill Wright describes a new genus and species of Rhizopod (*l. c.* p. 335, plate 15) met with in the sea in the neighbourhood of Inchkeith. The animal consists of a simple mass of brown or orange sarcode, enclosed in a very delicate and colourless membranous envelope, from openings in which it protrudes long pseudopodial branches, generally three or four in number, but sometimes, especially in larger specimens, more numerous. In many specimens a single large transparent nucleus is seen, but in others three or four appeared grouped together. These animals were from one-sixteenth to one-quarter of an inch in length. This Rhizopod is described under the name *Boderia turneri*; its reproduction is described as follows:— The large transparent nuclei, or ova, were seen to disappear; some hours afterwards the sarcode of the animal burst through its envelope and spread itself in ragged masses, connected by thick processes. A little later the sarcode became entirely dissipated, leaving a swarm of naviculoid bodies, from each of which in a day or two issued a minute nucleated amœboid mass; these existed for weeks as a closely aggregated band near the surface of the water, without assuming an envelope or putting forth pseudopodia.

Dr. Strethill Wright regards the so-called nucleus as a true ovum.

W. Archer describes a new species of *Difflugia*, *D. carinata*, related to, but distinct from, *D. triangulata*. He also describes as a new genus, with affinities to *Pseudodifflugia* (Schlumberger), *Amphitrema*, in which at each opposite extremity of the test there was a distinct rather wide aperture, furnished with a short well-marked neck; from each of these opposite apertures there issues a dense compact tuft of slender filiform occasionally branched pseudopodia. Quart. Journ. Micr. Sci. vol. xv. pp. 174–178.

Raphidiophrys, gen. nov., Archer. Body with very numerous slender, elongate, pellucid spicules; in the central portion of the body, one or several hollow globular clusters of chlorophyll-granules; pseudopods numerous, very long, and slender. *R. viridis*, sp. n., co. Wicklow, Ireland, Archer, Quart. Journ. Mic. Sci. vol. xv. p. 178.

Clathrulina is the name proposed for a new Actinophryan genus by Cienkowski (*l. c.* p. 311). This new form was met with first in St. Petersburg, and more recently in Dresden. It consists of a pear-shaped or globular latticework; skeleton supported on a long stiff stem; the openings in the latticework are round or many-cornered, and from these protrude the pseudopodia.

C. elegans, sp. n., Cienkowski, Petersburg, Dresden.

W. Archer exhibited specimens of this beautiful new form to the Microscopical Club of Dublin in April 1867. Quart. Journ. Mic. Sc. vol. xv. p. 295. The specimens were taken near Dublin, but were not named at the time.

Foraminifera. Reichert (*l. c.*), in his memoir on the contractile substance (sarcode, protoplasm) and on the motory phenomena in the Polythalamia and some other of the lower animals, recapitulates in great detail his views on this subject. This memoir is illustrated by seven plates (*vide* Zool. Record, 1866, p. 646).

Hauerina compressa, d'Orb., well known as a tertiary fossil, is mentioned by Brady as found in a recent state in the Hebrides (*l. c.* p. 69).

Valvulina conica, d'Orb., *Trochammina squamata*, P. & J., and *T. gordialis*, P. & J., are mentioned by Brady (*l. c.*) as new to the British fauna, having been found in the Hebrides.

Lagena jeffreysii, sp. n., Brady, *l. c.* p. 70, Hebrides; *L. pulchella*, sp. n., Brady, *l. c.* p. 70, Hebrides.—*L. gracillima*, Sequenza, *L. lyellii*, Sequenza, and *L. crenata*, P. & J., are recorded by Brady (*l. c.* p. 70) as new to the British fauna; Hebrides.

Globigerina. Major Owen (*l. c.*) gives a good deal of interesting information as to the geographical distribution of several species of this genus and of *Pulvinulina*; several varieties of *G. bulloides*, *G. inflata*, *G. continens*, *P. crassa*, *P. menardii*, &c. are figured. Major Owen proposes to make *Orbulina* a subgenus of *Globigerina*.

A series of soundings, twenty-nine in number, were made in November 1866, by Captain Oesterreichen, of the Austrian Navy, along the southern part of the west coast of the Istrian peninsula. Some of these yielded large quantities of small and of relatively large Foraminifera, such as *Polystomella crispa*, Lam., *Rotalia beccarii*, Linn., *Triloculina trigonula* (Lam.), &c. *Peneroplis planatus*, F. & M., occurred very rarely in a few shallow places. Jahrbuch d. k.-k. geol. Gesellschaft, Wien, Feb. 19, 1867, p. 62, and Ann. & Mag. Nat. Hist. vol. xix. 1867, p. 373.

Labyrinthula. Professor Cienkowski (*l. c.*) describes some very remarkable organisms met with incrusting some of the lower algæ found on the piles in the Port of Odessa. They consist of minute microscopical threads, which form thin colourless and intricate ramifications. Spindle-shaped bodies glide very slowly, in different directions, through the threads. The meshes are of very varied shapes and sizes, with arcuately curved outlines. Two sufficiently distinct species were met with, *L. vitellina* and *L. macrocystis*. The latter species was found living far higher up on the piles than the former species, even above water-mark. It would appear premature to decide at present where to locate these strange organisms. Even should they eventually be found not to belong to the domain of the zoologist, there needs no apology for alluding to them here.

IV. GREGARINIDA.

McIntosh describes (*l. c.*) a gregariniform parasite met with in *Borlasia octoculata* and *B. olivacea*, which may possibly be *Gregarina nemertis*.

END OF THE FOURTH VOLUME.